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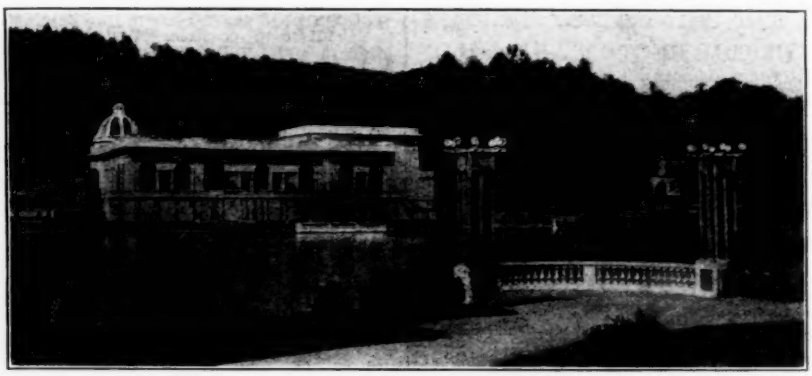

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## LECTURE I.

*(Delivered on June 4th.)*

### INTRODUCTION.—VASOMOTOR HORMONES.

SIX years ago I had the honour of giving here the Oliver-Sharpey lectures,[1] and chose as my subject the Activity of the Capillary Blood-vessels. My aim in those lectures was to bring together the evidence, much of it then of recent date, on the independent contractile activity of these minute vessels and its bearing on certain problems of physiology and pathology. Among the investigations which had provided this evidence were some in which I had myself taken part; and these had been largely concerned with the vascular effects of certain intensely active chemical principles. One of these, adrenaline, had long been known as a natural hormone, and as the first of the hormones to be chemically isolated, structurally identified, and prepared by artificial synthesis. Two other bases, rivalling adrenaline in the intensity and evanescence of their activity on the tone of the small blood-vessels, were also mentioned—histamine and acetyl-choline. There was then no evidence, however, which seemed to me adequate to justify the supposition that either of these substances was a normal constituent of the animal body. Their actions afforded a means of reproducing with certainty, and in graded intensity, changes in the tone of blood-vessels closely similar to those occurring in certain physiological and pathological responses. For the closer study and analysis of such responses, their use, and especially that of histamine, had been convenient and helpful. There was a certain amount of evidence suggesting that substances having what, for brevity, we called a "histamine-like" action might be liberated from injured or irritated tissues and play a part in the associated vascular reactions; but mere similarity of action on the blood-vessels did not afford evidence of identity or even of similarity in chemical structure. We were at that time concerned not so much with the chemistry of the agent, which we regarded as possibly inaccessible to investigation, as with the physiology of the reaction; and the results obtained by studying the effects of these known bases were applied only by way of analogy.

In the intervening six years evidence from a number of sources has produced a great change in the situation. In 1926 Sir Thomas Lewis gave his Croonian lectures on the Blood-vessels of the Human Skin, and in the following year published, in the remarkable book bearing the same title,[2] a systematic review of the investigations, mainly carried out by himself and his co-workers, on which the lectures had been based. A point of central interest in these researches was the recurrent evidence of liberation from injured or irritated cells of a chemical substance, closely resembling histamine in its action, and responsible for the vasodilatation and wheal-formation in the immediate neighbourhood of the lesion. In place of a plausible speculation we were thus presented with a fact, established by an impressive array of convergent and cumulative evidence. Meanwhile my own associates had been making progress, far beyond expectation, in the isolation in pure form from extracts of normal tissues, and the chemical identification, of substances producing the actions on peripheral blood-vessels with which we were concerned. From an entirely different direction evidence has appeared indicating that those changes in the automatic rhythm of the heart which are produced by stimulation of the vagus on the one hand, and of the sympathetic nerve-supply on the other, are not the results of the direct passage of nerve impulses to the heart muscle, but are mediated by the liberation, in close relation to its fibres, of chemical principles having inhibitory and excitatory actions. Again, a literature of recent growth and impressive volume has been devoted to the properties and significance of a substance which can be extracted from the heart, and particularly from the region of the sino-auricular node, and which has a stimulating effect on the rhythm. To this substance has been attributed the function of providing the natural stimulus to the heart's normal activity. From several different directions, therefore, evidence is accumulating of chemical factors in the control of the circulation, reinforcing and supplementing the long-recognised mechanisms of nervous control, and even intervening in the production of their effects. Moreover, between those chemical principles which appear to be concerned in the control of the function of the heart and those which are concerned with the variation of vascular tone, we have not merely a functional link, in that all are involved, in different ways, in regulating the circulation of the blood; in more than one instance there are grounds for suspecting that we may be dealing with the same chemical principle, exhibiting its activity in different forms on different organs. It has accordingly appeared to me that I might appropriately use this opportunity for a survey of the evidence concerning some of these chemical factors in the control of the circulation. I shall not attempt an inclusive review, but devote attention primarily to those factors concerned, in one direction or another, with the maintenance or modification of vascular tone. So far as evidence dealing with actions on the heart, or on other organs, is brought into the discussion, it will be on account of its bearing on my main theme. My choice of this limitation is determined partly by the direction of the investigations in which I have personally participated, and partly by the consideration that the evidence dealing with the agents concerned in vascular reactions is, as yet, more definite and detailed, especially on the chemical side, than any we have as to principles to which an exclusive effect on the heart's activity is attributed.

I shall of necessity touch on certain vascular phenomena with which I dealt, from another point of view, in the Oliver-Sharpey lectures, and on those which provided the rich evidential material of Sir Thomas Lewis's more recent Croonian lectures. My concern, however, will be primarily with the nature, distribution, and properties of the principles providing the chemical stimuli for such reactions; and the evidence which now makes it possible to speak with some assurance as to their chemical nature is largely a product of the past three years.

In order to give completeness to the conception which I wish to present to you, it will be desirable, in the first place, to pass in rapid survey over some familiar ground, and to consider the parts played in the control of the circulation by the long known substances which have claims to be regarded as circulatory hormones in the true sense—epinephrine or adrenaline, and the vasoconstrictor principle of the pituitary body. When I speak of these as "hormones in the true sense," it is necessary to make my meaning more explicit. When Bayliss and Starling introduced the word "hormone," they intended it to apply to an active principle formed in one organ and carried by the blood to others, in which it produces its specific stimulating or pharmacodynamic effect. Their discovery of secretin had suggested the need for a short term to indicate such chemical carriers of physiological stimuli by way of the blood stream. It appears to me to be very desirable, in the interests of clear thinking, to restrict the use of such a word to the meaning originally applied to it. In that original sense adrenaline might be taken as the perfect type of the hormones; and the pituitary vasoconstrictor principle, which, in view of

its recent physiological separation, we may now refer to as "vasopressin," has at least a presumptive claim to be included in the list. In the larger part of these lectures, however, I shall be dealing with substances of a similarly intense physiological activity, restricted in its normal incidence to the immediate neighbourhood of their liberation. The distinction between the function of such a locally acting chemical stimulant and that of a true hormone, carried everywhere by the circulation, seems to me to be a real one, and one having a special significance for our present purpose.

### Adrenaline and Vasopressin.

Adrenaline and vasopressin have the characteristic of true hormones, that each is formed locally in an organ having the specific function of its production, and is distributed by the blood to all parts of the body, affecting all blood-vessels which are specifically sensitive to its stimulus. In neither case have we any evidence that the blood-vessels of the producing gland are sensitive to the hormone formed in immediate relation to them. On the contrary, we may regard it as practically certain that they are not so; in the presence of relatively high concentrations of a vasoconstrictor so potent as either of these, the small vessels of the gland, if showing the sensitiveness of those in other organs, would be constricted to obliteration; the circulation through the endocrine tissue, essential to the hormone function, would be rendered impossible. The fact that both these general circulatory hormones are predominantly vasoconstrictor in their action, is worthy of note by itself. Apart from these general similarities the two differ widely, in what we know of their chemical nature, of their detailed modes of action, and of the conditions under which they are secreted into the blood and exhibit their actions on distant organs.

### *Adrenaline (Epinephrine).*

It is probable that our knowledge of adrenaline, of the conditions governing its secretion into the blood, and of the details of the method of its action, is more complete than of any other hormone. A relatively simple basic derivative of catechol, it was successfully produced by synthesis many years ago. It is readily destroyed by oxidation at the reaction of the body fluids, and quickly disappears from blood circulating through organs which react to its stimulus, so that its action, when applied through the circulation, is a very evanescent one, unless it is injected in quantities altogether above the physiological range. Accordingly it is admirably fitted for the temporary reinforcement, in response to some sudden emergency, of the effects of true sympathetic nerves on almost all organs supplied by them. The fidelity with which it reproduces such true sympathetic effects, augmenting or inhibiting the functions of different contractile or secreting cells in close accordance with their response to sympathetic impulses, was made clear many years ago, particularly by the work of Elliott.[3] It is further known, as hitherto in the case of no other hormone, that the output of adrenaline from the suprarenal medulla is under nervous control, responding to impulses in the splanchnic nerve-fibres running to the gland. The gush of adrenaline into the venous blood accompanying a sudden emotion, and the adaptation of its effects, especially on the circulation, to the physiological needs of the emergency, have been emphasised by Cannon.[4]

As regards the circulatory mechanism, we must suppose that adrenaline is carried in almost equal concentration to all parts of it, reproducing the sympathetic accelerator and augmentor effects on the heart-beat, and affecting the blood-vessels in the sense of their response to sympathetic impulses. The variations of this response, in intensity and even in direction, produce large variations in the relations between the vascular tone in different systems. The vessels of the gastro-intestinal canal are apparently in all animals more sensitive to the vasoconstrictor effect than those of the skeletal muscles, so that a small dose of adrenaline entering the general circulation will tend to produce a redistribution of the blood-supply, in favour of the muscles and at the expense of the alimentary canal. In some species—the cat and the dog—minute intravenous doses of adrenaline, given under the ordinary conditions of experimental anæsthesia, cause a relaxation of the minute vessels, particularly of the skeletal muscles, which often so predominates over the slight vasoconstriction produced by such doses in other tissues, as to give, on balance, a definite fall of arterial pressure. The meaning of this depressor, vasodilator action of small doses of adrenaline has been the subject of a number of investigations in quite recent years. Macdonald and Schlapp [5] have pointed out the pronounced accentuation of the phenomenon by administration of ether. In the decerebrate preparation the balance of the effect may change from depressor to pressor action, according as ether is given or withdrawn; and it has been suggested that the vasodilator action may not occur in the normal animal, but only under the artificial conditions imposed by ether. On the other hand, Richards and I were able to detect it on several occasions in the action of extremely minute doses of adrenaline on the vessels of the surviving, artificially perfused hind limb of the cat. On the whole, it seems to me probable that this dilator effect of minute doses of adrenaline, particularly on the small vessels of the skeletal muscles, is a truly physiological effect, occurring in the normal animal, and that ether assists its predominance, in the general effect on the arterial blood pressure, by a relative depression of the vasoconstrictor effects in other tissues.

The question as to whether this action is due to a true, sympathomimetic effect of adrenaline itself, or to the secondary liberation of a directly dilator principle, has also been raised. Richards and I [6] some years ago indicated the many points of resemblance between this special, weak vasodilator effect of adrenaline, as seen in the cat's limb, and the much more powerful dilator effect of histamine. The same changes of conditions, affecting the tone and response of the vessels, seemed always to accentuate or depress the two effects together. We were led to locate the action of both on the same type of minute vessels; and the resemblance was so suggestive as later to raise the question whether this effect of adrenaline might be due to a reactive liberation of histamine, just as a small dose of histamine, injected into a normal cat certainly causes the suprarenal gland to respond by a small gush of adrenaline (Kellaway and Cowell).[7] Burn and I [8] thought we had detected such a mechanism in the lung, but later experiments with Richards [9] revealed an error in our technique. On the evidence yet before us we must regard this vasodilator effect, as seen typically in the cat and the dog, as probably a true effect of adrenaline itself. Whatever the mechanism of its production, I think we must regard it as an important factor, in those species in which it occurs, in the redistribution of the blood-supply, in favour of the skeletal muscles and at the expense of the digestive viscera, which is occasioned by a natural acceleration of the output of adrenaline from the suprarenal medulla. We may think of it, therefore, as an item in the more general series of changes emphasised by Cannon, replacing the physiological conditions favourable to contemplative digestion by those which fit the animal for combat or flight, when adrenaline gushes into the vena cava at the call of anger or fear.

Another effect of adrenaline, almost certainly concerned in such a redistribution of the blood-supply in accordance with functional need, recently came to light in some experiments, as yet unpublished, which I carried out last year with Dr. Walter Bauer and Dr. Dickinson Richards, American guests in my laboratory. It concerns the control of the blood flow through the liver of the dog, and depends on a mechanism which has not yet been found in other species. The branches of the efferent, hepatic veins in the dog are furnished with stout coats of plain muscle (Simonds).[10] This muscle, as Mautner and Pick [11] first showed, is very sensitive to the effect of histamine, which throws it into powerful contraction, damming

back the blood in the capillary spaces of the liver, and causing a pronounced congestion of the whole organ. It can hardly be doubted that, during the process of digestion, small quantities of histamine absorbed from the contents of the bowel, in which they are certainly produced, will keep up some degree of such resistance to the venous outflow from the liver, with a resulting collection of a relatively large fraction of the total blood, firstly in the liver itself, and probably to some extent also in all the viscera drained by the portal vein. In the isolated dog's liver, artificially perfused both from the portal vein and the hepatic artery, by the use of a double perfusion scheme, we found it very easy to demonstrate this action of the hepatic veins, narrowing like a veritable sluice-gate in response to traces of histamine. Under these experimental conditions, however, we were able to recognise an antagonistic effect produced by stimulating the sympathetic nerves to the liver or adding small doses of adrenaline to the perfusing blood. We could observe the well-known constrictor effects of such stimuli on the branches of the hepatic artery, and, in weaker degree, on those of the portal vein; but even more striking than either of these, when the liver had become congested by resistance to the venous outflow, was the opening of the hepatic sluice, so that the turgid liver emptied its blood rapidly into the reservoir receiving the blood from the vena cava. Again I think we can hardly miss the physiological significance of such a mechanism. At a sudden call for vigorous activity of the voluntary muscles, under the stimulus of sympathetic impulses assisted by a gush of their chemical understudy, adrenaline, the veins would open widely and release, for the needs of the whole organism, blood which, during digestion, had been filling the capacious capillary bed of the liver. Anatomical studies may reveal the presence of such a mechanism in other species; by physiological methods we regularly obtained evidence of its function in the dog's liver, but failed to detect it in that of the cat.

While effects of adrenaline on the tone of the larger arterial branches to the lungs and to the brain cannot be excluded, it seems safe to say that functionally important effects on the small vessels, such as adrenaline shows in other organs, are not produced by it in these. Here again its action, or lack thereof, is closely parallel to that of the sympathetic nerves. Finally, the clearest exception to the predominantly vaso-constrictor action of adrenaline is provided by its dilator effect, again corresponding to an exceptional dilator action of sympathetic nerves, on the arteries supplying the heart. The reality and functional significance of this effect has been established by the recent work of Anrep and his co-workers, which, by an ingenious application of refined physical methods to the exact and continuous record of the coronary blood flow, has clearly differentiated effects on vascular tone from those due to the contraction of the heart muscle.

### *Vasopressin.*

The pituitary vasomotor principle presents in many respects a contrast to adrenaline. Though its existence was recognised by Oliver and Schafer [12] only a year after their discovery of the action of suprarenal extracts, our knowledge of its chemistry is still relatively meagre. An important step has recently been taken, however, towards its separation in a state of physiological purity. For some years past opinion had been sharply divided as to whether one or several active principles were responsible for the pressor, uterine stimulant and antidiuretic effects produced by extracts of the pituitary posterior lobe. My colleague Dr. Dudley and I had supported by evidence and argument the view that two at least, and probably more, were concerned; Prof. Abel of Baltimore and his co-workers had strongly defended the view that all the actions were due to one principle, which they believed that they had obtained in approximately pure condition. During the past year the matter has been settled, as it seems to me beyond further dispute, by Kamm, Aldrich, Grote, Rowe, and Bugbee,[13] who have made almost complete the separation which Dudley had partially effected, obtaining a powerfully vaso-constrictor fraction, which they term "vasopressin," with but slight action on the uterus, and another fraction which they term "oxytocin," powerfully stimulating the muscle of the uterus, but almost inactive on the blood-vessels. The action of the whole extract on the plain muscle of the uterus, and on the vascular tone are, therefore, certainly due to different principles. It is not yet possible to give an equally certain answer to the question whether the third therapeutically important action of the extract, the antidiuretic action, is due to yet another active substance, or represents a different aspect of the activity of the pressor principle. Specimens of vasopressin hitherto available have certainly shown antidiuretic activity; but it remains to be proved whether they possess it in the same relative potency, in comparison with the pressor action, as do complete extracts of the fresh gland. It would lead me too far from my present subject to discuss the evidence in detail, but there are indications that the two kinds of activity may vary independently in different commercial extracts, and that some samples of oxytocin, at least, may show antidiuretic without pressor activity. The available information leads me to expect that the antidiuretic action will prove to be due to another distinct principle.

However that may be, our immediate concern is with vasopressin and its function in regard to the circulation. Of its chemistry we know little. We can be certain that it is not a simple base like adrenaline or histamine. It is moderately stable when boiled in acid solution, but easily destroyed by alkali, resistant to peptic but destroyed rapidly by tryptic digestion. It is obviously either itself a relatively simple peptide, or closely associated with a body of that type and unable to exist in active form apart from it. The other pituitary principles have closely similar properties, but such evidence as we have suggests that vasopressin is rather more complex than oxytocin. Injected into the circulation it is not, like adrenaline, rapidly destroyed. Its action is, accordingly, long persistent, and even after its subsidence the vessels long remain relatively insensitive to further injections, suggesting that the principle is still present after its obvious effects have largely disappeared. When large doses have been injected, a substance having a similar pressor action, and very probably the unaltered vasopressin, can be recovered from the urine.

For its true hormone function, and the manner in which it comes into action, the evidence is again remarkably incomplete and indirect. The same is true of the other active principles found in this lobe of the pituitary body. It is difficult, indeed, to believe that a substance so potently active on artificial injection should be concentrated in a structure without other known function, with no provision for its carriage by the blood to the tissue in which its intense activity becomes effective. There appeared to be more direct evidence of the hormone function of the antidiuretic principle, in the artificial *diabetes insipidus* produced by removal or injury of the lobe, and the control of a pathological *diabetes insipidus* by injecting the extract. Even here, however, opinion is still divided between loss of the hormone and injury of the hypothalamic region of the brain, as the cause of the morbid diuresis. According to recent evidence, however, the evanescence of the diabetes following lobe removal, and its renewal on injuring the hypothalamus, may be due to the fact that the latter acquires, vicariously, the function of forming and storing the hormones normally found only in the pituitary posterior lobe.

In the case of vasopressin the evidence seems to be even less direct or convincing. Cushing and Goetsch [14] long ago put forward evidence in favour of its passage from the lobe into the cerebro-spinal fluid, and similar evidence has been given by Dixon and Marshall [15] with regard to oxytocin, the secretion of which they found to be influenced by the functional state of the ovary. It has never been clear, however, that the whole of the principle leaving the gland passes by this

route; the gland and its posterior lobe are well supplied with blood-vessels, and it is difficult to suppose that the blood passing through a tissue so highly charged with these diffusible principles could fail to carry its share. In any case, to reach the sites of their known actions they must eventually enter the blood stream; but there is no evidence of any nervous or other influence, by which the rate of the direct or indirect entry of vasopressin into the circulation is caused to vary. On the other hand, the fact that the posterior lobe of a given species, such as the ox, contains a remarkably constant proportion of vasopressin, at all times of the year and apparently under all physiological conditions, suggests a steady flow into the circulation, rather than a fluctuating output adjusted to the call of physiological emergencies, such as the evidence indicates in the case of adrenaline.

So far as its action has yet been analysed, vasopressin appears to produce its effects on the circulation by increasing the tone of the minute vessels without any discrimination corresponding to their nerve-supply. Earlier experiments, made with the crude extracts, had shown a stimulant action on the tone of isolated segments of large arteries. The effects, however, appear to have been due to non-specific impurities, and it is stated that vasopressin, when free from these, is without such action. Several observers (Sacks,[16] Lawrence and Hewlett[17]) have observed the ghastly, corpse-like pallor of the skin, especially of the face, produced in a normal man by a moderate dose of the pituitary extract injected intravenously. The effect is associated with a relatively trivial rise of the general arterial pressure, and occasions little subjective sensation. It can only be attributed, as Lewis points out, to constriction of the minute skin vessels, which in some areas seem to have a peculiar sensitiveness to vasopressin.

The effects of such artificial injections of an extract of the pituitary posterior lobe, or of its vasopressin fraction, on the blood-vessels of the human patient or of the anæthetised or spinal mammal, are indeed sufficiently impressive. There still remain, however, the questions of the degree of our certainty that the active principle does steadily enter the blood stream by a normal, physiological process, and of the function which it exercises, or physiological need which it satisfies, under such natural conditions.

In my Oliver-Sharpey lectures I dealt with Krogh's evidence,[18] derived from observations on the blood-vessels of the frog, which led him to the conclusion that the pituitary vasoconstrictor has the function of maintaining the normal tone of the capillaries, and therewith the normal restricted permeability of their walls. He found a substance, apparently diffusible, in mammalian serum, having properties compatible with the supposition that it was the normally circulating pituitary hormone. On the other hand, removal of the pituitary body in the frog had been observed to be followed by general œdema. Further observations published since that date, and a consideration of the evidence from animals other than the frog, have not strengthened the force of Krogh's evidence. Drinker,[19] working with Krogh, could not confirm the suggestion that the pituitary principle could reproduce all the effects of serum in preventing œdema of the perfused limb. Again, I know of no evidence that a recognisable loss of capillary tone follows removal of the pituitary posterior lobe in the mammal; the results of such an operation, except on the diuretic function, appear from the records, indeed, to be remarkably small.

We are still left, therefore, with evidence only incomplete and indirect of the passage of vasopressin from the pituitary body into the blood stream by natural secretion, and of its functional significance when thus distributed through the vascular system. I think it must be frankly admitted that the strongest evidence in favour of its function as a true hormone is still its occurrence in such quantity, in a tissue in which no local function can be imagined for it, and which yields it so readily to simple extraction with water.

## Normal Function of the Vasomotor Hormones.

Assuming, as I think we must, that vasopressin is always being secreted, at however slow a rate, into the circulating blood, we are still without data which would enable us to appraise the importance of its presence for the maintenance of a normal vascular tone. The same is true, indeed, of the adrenaline which, in the absence of any special stimulus, trickles slowly from the suprarenal gland into the *vena cava*. Destruction of the medulla of both suprarenal glands is not only compatible with indefinite survival, but is also without any definite effect on the general vascular tone or the arterial blood pressure of the resting animal.

Such absence of obvious change in the efficiency of the normal circulation, when the supply of one or another of these hormones is cut off at the source, appears less surprising when we consider them as items in the multiple provision for the maintenance of the vascular tone. We have, in the first place, the vasomotor centres acting through the sympathetic nerves. At the call of emergency their action is reinforced by accelerated output of adrenaline. It may be that the function of the pituitary hormone is to provide yet another safeguard against circulatory collapse, by a general and undiscriminating maintenance of tone in the small blood-vessels when sympathetic impulses and adrenaline alike begin to fail, under the stress of a prolonged and excessive demand for their action. Such a conception of its function would at least render intelligible the otherwise curious discrepancy between the trivial effects, on the arterial pressure and the general circulation, which its injection produces in the normal individual, and the remarkable restorative action which it exhibits on vascular tone, and therewith on the efficiency of the circulation, in the victim of primary surgical shock or vasomotor collapse.

If we accept the suggestion that the normal, slow secretion of these hormones has little effect on the tone of the vessels, while this is upheld by an efficient vasomotor centre, it is natural to inquire whether their presence in the blood can be detected by an action on vessels in an area deprived of its vasomotor supply, in an animal otherwise normal. It is, indeed, the fact, that vessels of which the vasomotor nerves have been cut, after an initial loss of tone, rapidly acquire a new one, which must be due to some constituent of the blood, and which often becomes greater than that shown by the corresponding, normally innervated vessels. This "automatic" or chemically stimulated tone, as Richards and I pointed out, affects chiefly the minute vessels, and especially the capillaries, on which histamine produces its characteristic vasodilator effects. Finding that these vessels rapidly lost their tone, and their power of responding to histamine, under conditions of artificial perfusion, and that these normal properties could be restored by a trace of adrenaline, we were inclined to attribute the recovery of tone after denervation to the circulation of traces of this substance. One difficulty in the way of such a supposition was that the denervated limb vessels, in natural circulation, showed a conspicuous dilator response to a very small dose of adrenaline itself, artificially injected. In more recent experiments Burn and I [8] have found that a small quantity of pituitary extract will similarly restore tone to these minute vessels in the perfused organ. It may be that both hormones are concerned in the recovery of vascular tone after denervation; and this is a possibility which could be tested by observing whether such recovery occurred in an animal from which the pituitary posterior lobe and the suprarenal medulla had both been extirpated.

The antagonism between the vasoconstrictor effects of these hormones and the dilator effects of histamine may give another and more direct hint as to their functional importance. In my Oliver-Sharpey lectures I mentioned the then recent observations of Kellaway and Cowell, showing the prompt acceleration of adrenaline output in the normal cat when a small

dose of histamine was injected intravenously, and the slight and evanescent effects which resulted from the balanced antagonism, as compared with the enormously enhanced and prolonged depressor effects of the same small dose of histamine in a cat deprived of the suprarenal medulla. As I shall show later, these observations gain greatly in direct significance from our new chemical evidence on the occurrence and distribution of histamine in the body. At this stage we may note that observations are lacking as to the effects, on the reaction of the animal to histamine, of extirpating the pituitary posterior lobe, either alone or in addition to the suprarenal medulla. But, while the evidence is far from complete, I think it is already sufficient to suggest a probability that a really important function of these hormones in relation to the normal circulation may be found in their power to check, and to restrict within physiological limits, the depressor effects of substances dilating the small vessels, when these escape into the general circulation.

### Central Nervous Control of Vasomotor Tone.

We have dealt so far with substances which, being secreted into the general circulation, and affecting the whole vascular system simultaneously, have an action which, with certain local exceptions and qualifications, is to increase or to uphold the tone of the small vessels. In this respect their action broadly resembles, and probably supplements, the effects of the nerve-centres controlling the tone of the vessels through their nerve-supply. There is evidence, indeed, of variation of the vascular tone by reflexes through the nerve-centres, causing unequal distribution of the blood-supply in favour of a particular organ. In the well-known Loven reflex, central stimulation of a sensory nerve from a limb causes general reflex vasoconstriction, accompanied by dilatation of the vessels in that limb, so that the circulation through it is increased. Bradford [21] observed a similar reflex dilatation of the kidney vessels, leading to increased blood flow through that organ, on stimulating centrally a neighbouring sensory root. The late Sir William Bayliss made a series of investigations on the centres involved in these vascular reflexes, and came to the conclusion that, in addition to the well-known vasomotor centres in the bulb and the cord, the action of which can be stimulated or inhibited, with resulting general increase or decrease of the vascular tone which they control, there are other centres which, when called into activity by sensory stimuli, cause active vasodilatation. There is no doubt at all of the reflex activation, through vasodilator centres, of such specifically vasodilator parasympathetic nerves such as the *chorda tympani* and the *nervi erigentes*, causing relaxation of the arterioles in particular localised areas. Bayliss held that, in addition to these local effects, vasodilator centres could cause more general arterial relaxation by impulses passing antidromically down sensory fibres.

Looking at the function as a whole, however, of the nerve centres controlling vascular tone, it is almost a commonplace to say that, like that of the hormones which receive a general distribution through the blood, it is predominantly tonic and vasoconstrictor. And this control, whether by the nerve centres or the true hormones, may be regarded as adapted to the maintenance of the average vascular tone needed for an efficient circulation, to its adjustment in relation to the pressure created in the large arteries by the heart's activity, and to mass variations in the distribution of blood-supply as between one system and another, or as between one organ and the rest of the body.

### Local Vasodilator Mechanisms.

A large proportion of the vascular reactions of the body, however, are of quite a different type from these, and are fitted to effect a much finer adjustment of the blood-supply to more closely localised requirements. Into this class come all reactions, most accessible to observation in the skin and superficial mucous membranes, but occurring in almost all organs, in which a localised stimulus, irritation, or injury causes a local, vasodilator reaction. Sir Thomas Lewis devoted his Croonian lectures a few years ago to a detailed experimental analysis of these local vascular reactions in the human skin. He found that, whatever the nature of the provocative stimulus or injury—mechanical, thermal, electrical, chemical, or photochemical—the reaction presented a characteristic threefold complex. This consisted of the local red reaction due to dilatation of the minute vessels, a wheal succeeding and coincident with this, and a surrounding irregular "flare" due to dilatation of stronger arterioles. The two former were independent of nerve-supply, while the latter involved the integrity of the terminal axon-branchings of the sensory nerve-fibres, and was obviously due to a local axon reflex. The immediate stimulus, however, to the whole reaction was, according to Lewis, a chemical one. Some substance was liberated from the injured cells which directly dilated the minute vessels and rendered their walls abnormally permeable, and, by its irritation of sensory endings, acted also as the primary stimulus to the reflex flare. He had thus proved that, in these local vasodilator reactions, a chemical agent took part, not merely as a reinforcement or alternative to a nervous mechanism, but as the sole primary stimulus to the whole series of reactions. He had no evidence as to the chemical nature of this agent; but among known pure substances he found that one reproduced this complex with detailed fidelity when introduced in minute dosage into the epidermis. This was the base histamine, the dilator effect of which on minute vessels, together with its constrictor effect on larger vessels and on the plain muscle of certain organs, had been studied by Laidlaw, Richards, and myself. Sollmann and Pilcher[20] had also observed that this substance, introduced by a special technique into the superficial layers of the human epidermis, caused local redness and wheal formation in much higher dilutions than any of a large number of substances which they tested by the same method. Lewis, using it at every stage of his systematic investigation of the reaction of skin vessels, produced a highly impressive series of analogies between its action and that of the substance naturally liberated from injured cells.

The similarity of action, however, gave at that time no warrant for assuming identity, or even similarity, of chemical nature. In my next lecture I shall endeavour to make clear the nature of the more recent evidence, which seems to me to have changed that situation, so that we can now regard it as highly probable that the substance recognised by Lewis, as liberated from irritated or injured cells of the human skin, and as evoking the vasodilator complex in their neighbourhood, is either histamine itself or some loose combination owing its action to histamine.

### References.


1. Dale: Brit. Med. Jour., 1923, i., 959, 1006.
2. Lewis: The Blood-vessels of the Human Skin and Their Responses, Shaw and Sons, London, 1927.
3. Elliott: Jour. of Physiol., 1905, xxxii., 401.
4. Cannon: Bodily Changes in Pain, Hunger, Fear and Rage, Appleton, New York, 1915.
5. Macdonald and Schlapp: Jour. of Physiol., 1926, lxii. (Proc. Phys. Soc., p. 12).
6. Dale and Richards: Ibid., 1918, lii., 110.
7. Kellaway and Cowell: Ibid., 1922, lvii., 82.
8. Burn and Dale: Ibid., 1926, lxi., 185.
9. Dale and Richards: Ibid., 1927, lxiii., 201.
10. Simonds: Anat. Record, 1920, xviii., 219.
11. Mautner and Pick: Münch. Med. Woch., 1915, lxii., 1141.
12. Oliver and Schafer: Jour. of Physiol., 1895, xviii., 277.
13. Kamm, Aldrich, Grote, Rowe, and Bugbee: Jour. Amer. Chem. Soc., 1928, l., 573.
14. Cushing and Goetsch: Amer. Jour. Physiol., 1910, xxvii., 60.
15. Dixon and Marshall: Jour. of Physiol., 1924, lix., 276.
16. Sacks: Heart, 1924, xi., 353.
17. Lawrence and Hewlett: Brit. Med. Jour., 1925, i., 998.
18. Krogh: Anatomy and Physiology of the Capillaries, New Haven, 1922.
19. Drinker: Jour. of Physiol., 1927, lxiii., 249.
20. Sollmann and Pilcher: Jour. of Pharm. and Exp. Ther., 1917, ix., 309.
21. Bradford: Jour. of Physiol., 1899, x., 358.

# Ingleby Lectures

ON

# SOME TYPES OF SEPTIC INFECTION IN THE NEWLY-BORN.

*Delivered in the University of Birmingham on May 23rd and 30th, 1929,*

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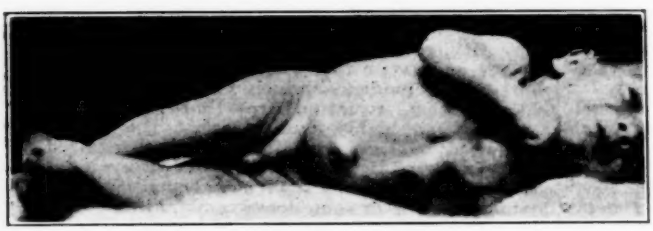
## LECTURE II.*—TRISMUS NEONATORUM AS A MANIFESTATION OF SEPSIS NEONATORUM.

### *Its Confusion with Tetanus.*

IN some cases of sepsis neonatorum it has been mentioned that after death there is disclosed the evidence of a widely spread cerebro-spinal irritation with œdema and hyperæmia of the pia mater, an exudation of serous or sero-sanguineous fluid and multiple small hæmorrhages. It has indeed been debated whether these post-mortem findings are the cause or the result of the striking clinical disorder known as trismus neonatorum. It has been said that they may be produced by the state of asphyxia and circulatory failure which precedes death, when the whole body is held in rigid spasm, and is liable to repeated and violent convulsive seizures. That they are the cause and not the results of trismus neonatorum seems to me proved by a careful consideration of all the circumstances. It has added to the difficulties that these cases have for long and persistently been confused with idiopathic tetanus. It may be that cases of idiopathic tetanus do occasionally occur in neonatal life. I know no way to disprove the possibility. But it is clear, I think, that trismus neonatorum is in general a manifestation, not of tetanus proper, but of sepsis, and that the assumption which has very usually been made that trismus neonatorum and tetanus are identical, has no justification whatever. It is perhaps of interest to notice that, if we exclude this neonatal disorder, tetanus is almost unknown, as Gowers[1] has emphasised, before the age of five.

FIG. 2.



A case showing well the extreme rigidity of the whole body with a greater degree of trismus.

But even among adults we occasionally encounter this confusion clinically between tetanus and meningitis. Thus Batty Shaw,[2] in recording a case of streptococcal meningitis which during life was thought to be tetanus, writes as follows:—

> It is clear that meningitis may provoke spasm of the facial muscles, producing risus sardonicus, of the muscles of the neck and of the abdominal wall, that the spasm may be constant, lasting for hours or even for days, and that the spasm may be increased by irritation, such as is produced by nasal feeding, &c., the patient remaining conscious throughout the illness. Such features have been held in the past to constitute a clinical picture of undoubted tetanus. This view must be abandoned. It appears to us that no reliance can be placed upon an exclusive clinical picture of tetanus, because the disease may be accurately imitated by meningitis.

Batty Shaw further states that a search in text-books produced only one reference to the possibility of confusion (Allbutt and Rolleston[3]). I can, however, myself recall at least two cases of meningitis upon which I conducted post-mortem examinations on which a diagnosis of tetanus had been made during life. In the second case, as has happened in others, it was suggested that the meningitis had followed the injection of antitetanic serum insufficiently sterilised. The other case had had no serum. The possibility of confusion was certainly well known to the older physicians and, as I should have expected, is referred to in two separate places by Fagge and Pye-Smith[4] in their text-book. At a still earlier date the records of post-mortem examinations carried out upon cases which were regarded and described as tetanus include many in which the evidence of meningitis is described. A century ago, inflammatory appearances of the brain and spinal cord were confidently described as characteristic of tetanus, but tetanus, at that date, meant no more than muscular spasm.

FIG. 1.

A comparatively mild case, showing spasmodic contraction of the hands, rigidity of the facial musculature, and a mild degree of trismus.

In almost all cases of sepsis neonatorum there will be found some evidence of excessive rigidity of the muscles. The face is apt to be stiff and lined, with a haunted, startled expression well shown in Fig. 1. The arms are flexed at the elbows. The hands are held pronated, clenched, and with the thumbs adducted, a characteristic position quite unlike that of the "accoucheur's hand" of tetany.

In that variety of sepsis neonatorum which we are now considering this rigidity of the muscles is the most characteristic feature and is developed to a remarkable extent. It is combined with restlessness or partial coma, convulsions, twitching of the muscles, some degree of opisthotonos, and finally with trismus. The rigidity of the jaw, unlike what is found in true tetanus, is not an early development, nor is there any tendency for the jaw muscles to be involved with special severity. The rigidity of the jaw is in keeping with the rigidity of all the muscles. As I have been at some pains to emphasise the infant functions solely as a suction apparatus and, characteristically, it is this peculiarity of the infant that has focused the

* Lecture I. appeared last week.

attention of observers upon this particular group of muscles and led to the confusion with tetanus. In cases which recover the spasm of the jaw in trismus disappears comparatively early, while the spasm in the hands and feet may remain for many weeks longer, a feature very unlike what we find in tetanus.

FIG. 3.

A severe case, showing complete "risus sardonicus" and spasm of the hands.

The accompanying photographs illustrate cases of trismus neonatorum which from time to time have been under my care. All were admitted to hospital in the first ten days of life. Two had septic exfoliative dermatitis of a mild sort, one had a septic umbilicus, one had a large sloughing ulcer on the palate (Bednar's aphtha), in a fifth no focus of infection was obvious, but the mother was admitted to hospital with puerperal symptoms. Fig. 1 shows a mild case which recovered in about three weeks. The face was stiff and lined, and there was generalised rigidity of all the muscles, and a slight degree of opisthotonos. The infant was unable to suck, and a finger introduced into the mouth was held firmly by the clenched jaws. Another case (Fig. 2) illustrates well the extreme rigidity of the whole body. Fig. 3 shows the condition in a third child, in which the severity was much greater, so that the simulation of tetanus was complete. Here we have the final picture of risus sardonicus. Death took place from gastro-intestinal disturbance a fortnight later, at a time when the spasm had to a great extent disappeared. Post-mortem examination showed great hyperæmia and congestion of the brain and spinal cord, with œdema of the pia mater. The study of the cerebro-spinal fluid in this case, removed during life, at the height of the spasm, showed clear evidence of cerebro-spinal infection or irritation. The cells numbered 250 per c.mm., and the protein content was raised to 0·12 per cent.—six times the normal. Fig. 4, a photograph taken when the infant was 3 weeks old, shows a case of special importance for my present argument. For many weeks the jaw was rigidly fixed, but with the mouth held widely open and not closed, a position recalling that characteristic of the progressive lenticular degeneration of Wilson.[5] The spasm of the hands and feet lasted for months. Indeed, it gave rise to a persistent deformity of the fingers, shown in Fig. 5. As we watched, there gradually developed a peculiar shortening of the tissues on the flexor aspects of the clenched fingers, so that ultimately, after all spasm had ceased, there remained an inability to extend the fingers because of this shortening. So far as I could judge, this infant, with a septic umbilicus, showed a condition identical with that of trismus neonatorum, save for the position of the jaw. The child, except for the persistent deformity of the fingers, made a good recovery, regaining the power to suck after about 16 days, but died when 2 years old from broncho-pneumonia.

*The Disease of St. Kilda.*—I believe that in these and other infants from poor homes in the south of London, I am witnessing the degenerate descendant of the awful trismus nascentium, or eight days' sickness, which was formerly so rife in this and all countries, which survived until recently in the remote Hebridean island of St. Kilda, which persists to-day among the negroes of the West Indies and the Southern States of America, and which appears to retain all its virulence and all its frequency among the natives of India, attracting only an occasional official comment in a Government statistical survey.

Formerly in this country new-born infants died in great numbers from a disease, characterised especially by trismus, which was called sometimes, from the day of its usual appearance, the "eighth day sickness" or the "nine days' fits," and sometimes indifferently trismus and tetanus neonatorum or nascentum. Colles,[6] at the beginning of last century, was apparently the first to identify the disorder with traumatic tetanus and to find the focus of infection in an "unhealthy or unkindly form of inflammation or ulceration of the umbilicus." But to Colles the word tetanus implied merely spasm, however produced.

In the 25 years ending 1782, of 17,650 infants born in the Rotunda Hospital in Dublin, 2944 died of trismus. Following improvements in ventilation

FIG. 4.

A case in which the jaw was rigidly fixed in the open position with extreme spasm of the extremities.

and hygiene, the number fell rapidly from 17 per cent. in the above figures to 0·2 per cent. between 1826 and 1833. The decline elsewhere in these islands seems to have been steady, if especially in rural Scotland, more gradual until, by the second half of the last century, it lingered, like belief in witchcraft and the evil eye, only among the most remote and primitive communities. The story of St. Kilda is known to all. In 1860, of 125 children born to the 14 married couples in the island, 80 had lost their lives within 14 days, almost all of trismus. Up to 1890 the scourge continued unabated,

when it ceased under the administrations of Nurse Chisnall, a Gaelic-speaking nurse, who consented to be marooned on the island for the winter, taking with her a plan of action worked out by Dr. W. L. Reid of Glasgow, a knowledge of the importance of cleanliness, and a plentiful supply of iodoform for the cord.[7]

Elsewhere on the edge of civilisation the disease continued its ravages, especially among the black population in the West Indies, in the Southern States of America, in the Balkans, and in India. In parts of India to-day it is still appallingly common. Thus the annual reports[8] of the Sanitary Commissioner with the Government of India for 1919 state that the deaths from tetanus in some towns and districts are over 50 per cent. of the total infant mortality, which itself stands at a figure of from 20 to 30 per cent. of live births.

A mortality so vast and so continuous among any population so long as it is ignorant of precautions against sepsis, and so easily controlled by the introduction of such precautions, seems more likely to be the direct result of septic infection of the newly-born than to be due to the accidental contamination of the umbilical wound with the bacillus in each and every case. In general the search for the bacillus proves quite in vain. For an account of numerous post-mortem examinations carried out at a time and in a district when the disease was still very common, I may refer to a description by Hartigan,[9] published a month or two before the discovery of the tetanus bacillus. From the descriptions of the older observers in all countries one point only emerges, that the spinal cord and meninges were very vascular. In many there were noted "extravasations of blood," "deposits of fibrin," or "extravasations of lymph." Hartigan, besides analysing the results of previous post-mortem examinations, himself conducted 23 autopsies in most of which extravasation of blood-stained lymph was found around the spinal cord. He gives a good microphotograph of the histological appearances, showing lymph around the cord. That same year the tetanus bacillus was discovered by Nicolaier. Since then it has been tacitly assumed that trismus and tetanus are identical. This assumption, and the increasing rarity of the severe and fatal forms of the disease, has made the post-mortem records of recent years few and unsatisfactory. In the post-mortem reports of my own hospital, at Guy's, I can find notes of only two recent post-mortem examinations. In one the notes and apparently, the examination, are too scanty to be of any value. The other was very fully examined by Prof. Laidlaw, and it is significant that this infant died with infective endocarditis on the tenth day of life. Numerous vegetations were found on the valves of the heart. The umbilicus was unhealthy, but the condition of the brain and cord is not stated.

Trismus neonatorum, then, I believe to be no more than a manifestation of sepsis neonatorum. In some few cases the muscular spasm is so prominent a symptom as to dominate the clinical picture, but in a high proportion of all cases of sepsis some degree of muscular rigidity, and some definite interference with the art of suction, is present. My own experience convinces me that the minor degrees of trismus in sepsis are not uncommonly met with even to-day. In infancy, the accidental importance of the act of suction, the one powerful coördinated muscular action of which the child is capable, has focused attention upon the jaw muscles and has led to the confusion with tetanus.

## Prevention of Sepsis Neonatorum.

To prevent sepsis neonatorum we must keep three objects in view: (1) We must remove all sources of infection. (2) We must protect, so far as is possible, all portals of entry, especially the skin, the umbilicus, and the mouth, from irritation, excoriation, and infection. (3) We must strengthen in every way possible the child's power of resistance to infection.

Let me consider each of these three points in turn.

1. The chief risk to the newly-born is from the person of the attendant. Especially dangerous is any septic sore or abrasion upon the skin of her hands. Not infrequently an epidemic of pemphigus or dermatitis exfoliativa among the newly-born in a district has been traced to such a septic point on the hand of a particular midwife. Impetigo among the older children in the family is also responsible for many cases. Pyorrhœa alveolaris in a midwife who constantly wets her fingers in saliva, and purulent nasal or bronchial secretions is another source of danger. One of the worst cases which I have encountered in a comparatively well-to-do family was caused

Fig. 5.

The hand of Case 4 photographed some months later, showing permanent deformity of the fingers. The middle finger is being extended to the utmost of which it is capable.

by a nurse with a sore place, quite small but very unhealthy, at the angle of her mouth, which had been present some days before the birth and which, as she spoke to me, she touched more than once. The increasing attention paid to such matters is probably the explanation of the remarkable decline in the incidence of sepsis neonatorum. It is interesting to note that, for the same reason, osteomyelitis has become a comparatively rare disease because the percentage of children going about their ordinary life and exposed to trauma, while suffering from local pyogenic skin infections, has so greatly diminished. There is reason to believe that a century ago such skin infections were almost universal and too little infections were almost universal and little regarded.

2. In very many cases infection takes place through the skin. The skin of the newly-born is peculiarly ill-fitted to stand contact with infection. The epithelium is very thin and, especially the protective horny layer, is little developed. In all cases, but in very varying degree in different infants, there is visible desquamation of the most superficial layers in the first days of life. In the papillæ, which are also poorly developed, there is a well-marked network of vessels, which is situated so superficially that its presence goes far to explain the great tendency to exudative and serous processes, as for example, urticaria, pemphigus, and so forth. While the sweat glands are poorly developed, the seborrhœic glands are large and numerous, as we might expect from the frequency of seborrhœic disturbances. The study of the microscopic structure of the skin of the newly-born shows perhaps better than in any other way the danger to the infant of friction in removing the vernix caseosa, or in drying, of reflex scratching, and generally of irritation from contact with urine and fæces.

*Pemphigus and Dermatitis Exfoliativa.*—In the skin of the newly-born, with its peculiar structure, impetiginous infection shows itself in two characteristic forms of rash—i.e., the discrete form, pemphigus,

and the confluent, dermatitis exfoliativa. In pemphigus a number of large superficial bullæ rapidly form, filled with serous, later with turbid, contents. The bulla soon ruptures, discharging fluid, and leaving a circular area, moist and bright red, outlined by a ring of the separated epithelium which still remains adherent. In the diffuse or confluent forms known as dermatitis exfoliativa, large areas of the deeper layers of the skin are exposed, while the remains of the superficial epithelium hang adherent here and there in shreds and patches like pieces of soaked tissue paper. The appearance may be so like that of a scald that I have known this diagnosis made despite the protests of the mother that no scalding had taken place. These profuse and rapidly spreading rashes, repeating at each point the same appearance, should be readily distinguished from syphilitic eruptions, with which they are nevertheless often confused. It is well to bear this in mind, because almost always the suggestion that the rash is syphilitic has been made by some irresponsible person. In the past the mortality has been high. The older writers (Corrigan, 1834) spoke of a 90 per cent. mortality. In my own experience the mortality has not been high. Probably the fatal cases are those in which a generalised infection is added with cerebro-spinal involvement—trismus and convulsions—and these have grown rare with the decline of severity in this type of skin infection. The umbilicus is always infected secondarily in pemphigus and dermatitis exfoliativa, and as a primary source of infection it plays a considerable part. The danger is especially great when the cord has been very thick and has remained adherent for an unusually long time. In such cases the desiccation of the cord does not proceed satisfactorily, and a moist gangrenous process is apt to be substituted for a dry.

Sometimes it is clear that infection of the skin has taken place by contact with fæces and fæcal organisms. A deeply eroding pustular eruption of the buttocks, spreading from the anus, to which the name echthyma gangrenosa varicelliforme has been given, may in turn give rise to a generalised infection. Trauma, to the delicate mucous membrane of the mouth, is apt to result from any attempt to cleanse the cavity by friction, however gentle. The utmost cleanliness and the greatest gentleness in handling the infant is very necessary.

3. Breast-nursing—a great gain for the healthy baby—becomes all-important for the baby with septic infection. In trismus, nasal or œsophageal feeding with milk expressed from the mother's breast is the best plan. Blood transfusion, if quickly and dexterously carried out, no easy task in a young infant, may save life.


REFERENCES.

1. Gowers, W. R.: Diseases of Nervous System, 3rd ed. London, ii., 675 and 680.
2. Shaw, H. Batty, and Shapland, C. D.: Brit. Med. Jour., 1923, i., 183.
3. Allbutt and Rolleston's System of Medicine, London, 1910, viii., 596.
4. Fagge and Pye-Smith: Textbook of Medicine, 3rd ed., London, i., 655 and 724.
5. Wilson, S. A. K.: Brain, 1911–12, xxxiv., 295.
6. Colles, A.: Dublin Hospital Reports, 1817, i., 175.
7. Turner, G. A.: Glasgow Med. Jour., 1895, xliii., 161.
8. Annual Reports of the Sanitary Commissioners with the Government of India, Ca cutta, 1921.
9. Hartigan, J. F.: Amer. Jour. Sci., 1884, lxxxvii., 84.


# THE CLINICAL SIGNIFICANCE OF HYPERBILIRUBINÆMIA.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THE clinical significance of the estimation of the various bodies that are found normally or pathologically in the blood becomes steadily greater. To obtain these estimations in everyday practice simple methods are essential; these have been perfected for the estimation of urea, glucose, chlorides, calcium, and creatine. Bilirubin-determinations have revealed latent jaundice in obstruction of the bile-ducts, early hepatic cirrhosis, after treatment with the arsenobenzols, in secondary carcinoma of the liver, and in hepatic insufficiency. On the other hand, they prove the absence of jaundice in subjects tinted with other pigments such as carotin, or in patients whose straw colour might suggest subjaundice. If, as modern theories state, bilirubin is formed in the endothelial tissue and the hepatic cell is only a filter through which it passes, variations in its amount in the blood would be expected in diseases of that tissue, or when the hepatic cell does not allow circulation of the bile, or whenever elimination of the bile through its ducts is totally or partially obstructed.

Several methods of estimating bilirubin have been proposed: (1) comparison of different dilutions of the serum with a standard solution of potassium bichromate (Meulengracht, Gram, Berhardt and Mans, Erst and Förster); (2) transformation of bilirubin into biliverdin by oxidation (Gilbert and Herscher and Herzfeld); (3) combination of bilirubin with the diazo-reagent and estimation by a standard solution (H. van den Bergh). The first method, though quite simple, is useless for small quantities and has the disadvantage of requiring comparison of intensities but not of colourations. The van den Bergh method, much used recently, depends on the reddish colouration that bilirubin shows in a neutral medium when mixed with Ehrlich's diazo-reagent; in an acid medium the colour becomes bluish-purple. This reaction is very sensitive; the estimation is made by comparison with a standard solution. Bilirubin was first employed by the author, but on account of the difficulty of obtaining and preserving it he substituted an ethereal solution of iron sulphocyanide. Haselhort uses a mixture of Bordeaux red and methylblue, and Thannhäuser and Andersen a solution of bilirubin in an acid medium. The diazo-reaction does not take place with biliverdin, and this is often inconvenient if the examination is delayed. The presence of a substance that is not bilirubin renders the procedure uncertain. Herzfeld criticises the van den Bergh method on the ground that the amount of bilirubin in the alcoholic extract may vary with different quantities of bile and also with the alkalinity of the blood. By increasing this alkalinity with sodium bicarbonate they extracted with the alcohol large amounts of bilirubin. Furthermore, van den Bergh believed that only bilirubin gave a red colouration in an acid medium; but Herzfeld has seen indol and pyrrol produce the same effect, the test being 200 times as sensitive to the latter as to bilirubin or indol. Indol in the blood comes from the hæmoglobin and gives rise to a series of pyrrolic bodies.

### *Technique of Herzfeld's Method.*

The method founded on the transformation of bilirubin into biliverdin is quite simple and very exact, and we have used it in many cases.

Into a series of test-tubes we put 1 c.cm. of water, except that the first tube has 1 c.cm. of undiluted serum. To the water in the second tube we add 1 c.cm. of serum and from this mixture of serum and water we take 1 c.cm. and put it into the third tube and so on with the rest, repeating the dilution until a colourless mixture is obtained. Then to every tube is added a few drops of freshly prepared Hammarster's reagent, the limit where light green colouration appears being noted against a white background. The Hammarster's reagent is prepared by mixing one volume of 25 per cent. nitric acid with 19 volumes of 25 per cent. hydrochloric acid; we let it stand 24 hours before use and keep it for one year. At the time of use we mix one volume with four of alcohol. The colouration of these tubes is compared with others that contain a known dilution of bilirubin. Frigyer, in order to get greater accuracy, made a 1 in 10 dilution with the last tube.

The advantage of this procedure, besides its simplicity, is that the comparison is made with a

similar solution of bilirubin. Van den Bergh believes it possible to differentiate the types of jaundice according to the behaviour of the serum with the diazo reagent. He noticed that the serum of patients suffering from obstructive jaundice gave the reaction with Ehrlich's reagent without the addition of alcohol, while in the serum of patients suffering from hæmolytic jaundice or pernicious anæmia the combination does not occur at all or occurs only after a certain time and incompletely; these serums gave the reaction quickly and normally if alcohol was added. The first reaction is called "direct," the second "immediate indirect" if it appears in a few seconds and completely, after the addition of alcohol, and the third "delayed indirect" if it takes place more than half a minute after the addition of alcohol and partially. Feigl has applied the term "diphasic reaction" to a slight change appearing at once and then ceasing. The different reactions of jaundice serums, van den Bergh thinks, may be due to a slight difference in the chemical composition of the bilirubin molecule or, more probably, to a binding of the molecule of bilirubin with albuminoid bodies in the serums giving delayed reaction, this union being broken before the reaction can be produced. Adler and Strauss, after numerous experiments, believe that it corresponds with physico-chemical modifications of the serum and that both the direct and indirect reaction in the serum of icteric subjects or of those with some blood disease differ essentially in their colloidal reaction.

As a result of our investigation we cannot admit that the van den Bergh reaction is useful in distinguishing the different kinds of jaundice. We often find an immediate direct reaction when the serum is rich in bilirubin, and when the proportion of bilirubin is small a delayed or indirect reaction is sometimes shown. The different reactions of the serum with Ehrlich's reagent depends, according to us, more on the quantity of bilirubin than on the way this has been formed. Friedmann and Strauss found in some cases that, while the indirect reaction is positive only at the beginning of jaundice, later the direct reaction occurs immediately and distinctly. Barchi also has observed that the rapidity with which the direct reaction appears depends on the concentration of bilirubin in the blood; it is therefore useless as a criterion by which to distinguish the nature of jaundice; dynamic jaundice responds to the diazo-reaction in the same way as the so-called static jaundice does.

### *Bilirubin in the Normal State.*

The amount of bilirubin in the blood varies according to different authors and their estimates depend perhaps on the method used. According to van den Bergh it varies between 0·2 and 0·6 units, which corresponds with 0·1 to 0·3 mg. per cent. Jenndrasik and Czirke, using a modification of the former's technique, found higher amounts, and if the determinations are carried out on the plasma instead of the serum the quantity is still greater. Haselhort, Scherk, and Cowen give 0·5 mg. as an average quantity. In Wiener's opinion the normal amount is 0·8, a figure also found by Botzian. Förster and Förstener think that 1 mg. per cent. is the limit. Herzfeld, using his own technique, found in normal subjects from 1·6 to 6·25 mg. per cent., a figure 20 times as high as those obtained with the van den Bergh technique. Our observations with Herzfeld's technique have shown that bilirubin does not normally exceed 6·25 mg. per cent.; higher figures are a sign of functional disorder of the liver or of obstruction to the flow of bile. Schiff has cited figures a little higher for men than for women; Ernst and Förster found a greater quantity of bilirubin in normal persons when fasting than after meals, the variations fluctuating from 0·1 to 0·2 mg.; Brown and his assistants found some greater differences. According to Förster and Förstener this increase is probably due to the elimination of bilirubin from the blood during the digestive phase. Hooper and Whipple have observed that after the ingestion of carbohydrates the serum-bilirubin transitorily increases because, they think, the starch stimulates the elimination of the pigments already formed. Meyer and Knüpffer noted a decrease of bilirubin between the second and third hour after meals in normal subjects, this diminution being greater in the fifth hour but disappearing after eight hours, when the bilirubin begins to increase. They also found an increase when the subject fasted all day or when milk or rice or barium sulphate was administered. On the other hand, the ingestion of a litre of water did not bring about any alteration.

While many people with hepatic trouble show a normal amount, others have a hyperbilirubinæmia after food ingestion that might be explained by reabsorption of bilirubin through the intestine and its passage to the disordered liver. Perkin has noted a relation between the quantity of bilirubin and the skin pigmentation, the bilirubin being greater in swarthy subjects than in fair ones. H. van den Bergh calls a slight increase of pigment, which might correspond either to Gilbert's "familial colæmia," or to the "bilious temperament" of other authors, a "physiological hyperbilirubinæmia." We regard this increase of bilirubin as invariably pathological, a sign of latent jaundice.

### *Bilirubin in Pathological States.*

The course of a jaundice is empirically estimated by the colouration of the tissues and urine; this depends not only on the quantity of pigment present but also on the dilution—i.e., the amount of urine eliminated. Both procedures are rough enough and can only be relied on to reveal gross variations of pigmentation that need several days to produce. Bilirubin has been regarded as an echelon body, like glucose for instance, so that the pigment only begins to be eliminated through the urine when it reaches a certain concentration in the blood. For the subicteric tinge to be perceptible the blood-pigment must reach 50 mg. by Herzfeld's method which, as we have stated, gives us figures 20 times as high as van den Bergh's. The majority of authors have found with this method or any similar one that from 2·5 to 3 mg. per cent. of bilirubin must be present in the blood to give visible jaundice. The evolution of jaundice can be rapidly and certainly followed by examining the serum bilirubin quantitatively, and there is no need to emphasise the diagnostic and prognostic importance of exacerbations or remissions of jaundice, especially after surgery of the biliary passages. The determination of pigment in the blood is of great advantage for the diagnosis of cholecystitis, both in its quiescent stages and in acute attacks. While diagnosis of hepatic colic is usually easy, it may at times cause confusion. When the bile obstruction is complete and lasts a certain time, the presence of bile-pigments in the urine or commencing jaundice will be valuable data; but if the obstruction is partial or of short duration, then the bile retention will not have been enough to dye the tissues or to appear in the urine, even though there is hyperbilirubinæmia. In these doubtful cases blood should be tested from 12 to 24 hours after the commencement of the attack. If there is a disorder of the biliary passages, there will be an increase of bilirubin in this specimen over that taken when the patient was quite well; the differences, of course, are not great or there would be obvious jaundice. In this way it is possible to distinguish the hepatic colics from those arising from other sources such as kidneys, appendix, intestine, stomach, or urethra.

Takats recently saw an increase of bilirubin in 15 cases of hepatic colic without jaundice; he examined the blood every four hours and believes that the increase of pigment after the colic is due to a rapid increase of tension in the bile-ducts. The hyperbilirubinæmia lasted one or two days; when atropine was administered there was a decrease, which might be explained by muscular relaxation and better passage of bile through the excretory ducts.

In cases of cholecystitis, even in the intervals of the attacks, we can detect pigment increase, a sign of latent jaundice. Friedmann and Strauss find increase of pigment in 93 per cent. of cases during the attack and 63 per cent. in the intervals; they account for it either by the greater reabsorption of pigment through the walls of the inflamed gall-bladder or by an expansion of the inflammatory process, or of the bile-duct obstruction. According to William Bloom, ligature of the cystic duct of dogs does not produce an increase of bilirubin in the blood, which would explain the lesser degree of hyperbilirubinæmia that Friedmann and Strauss found in the intervals of the attacks.

Kehr states that 51 per cent. of patients suffering from cholelithiasis have jaundice (transitory, recurrent, or continual), while of those harbouring calculi without showing symptoms only 5 per cent. have jaundice; but a certain number of these have latent jaundice. The maximum degrees of hyperbilirubinæmia are naturally found in cases of severe jaundice, when there is common bile-duct obstruction from impacted calculus, cancer of the head of the pancreas, or angiocholitis, and in these cases we only use the bilirubin test to estimate the course of the jaundice.

The study of hepatic insufficiency has also been advanced by this test. In experimental degeneration of the hepatic cell produced by phosphorus injection into dogs the elimination of phenoltetrachlorphthalein through the bile was delayed as the amount of bilirubin in the serum increased. This relation between bilirubin and the retention of dye has also been proved by Snell, Greene, and Rowntree. In man we have seen after chloroform anæsthesia increase the amount of bilirubin by liver damage. Given equal quantities of anæsthetic the increase of the biliary pigment will depend on the liver state; the already diseased cell will tolerate the chloroform worse and the hyperbilirubinæmia will be greater; when it is not severe enough to produce jaundice only serum examination reveals the hepatic lesion. At the same time bilirubin can be injected into the blood stream and the time elapsing before its disappearance can be noted.

Diagnosis of hepatic cirrhosis that offers few symptoms at the beginning—so that diagnosis is usually only made at a late stage—will be greatly helped by the determination of bile-pigment. We have found in hypertrophic cirrhosis, many years before an icteric tint appeared, a small hyperbilirubinæmia which, together with some digestive troubles and the result of the bile examination, put us on the track of an early diagnosis. In most cases of portal cirrhosis with ascites Greene, McVicar, Snell, and Rowntree have noted that the amount of blood bilirubin was not increased. There is an early increase of pigment in most cases in which there is a gland lesion, and during the digestive periods, especially if hepatic insufficiency exists, there is a slight hyperbilirubinæmia which is often found, also, during menstruation. We have found it, though not above 4 mg., in subjects with cardiac weakness, specially of the right ventricle; the degree of weakness bears a close relation to the amount of bilirubin, but we do not agree with Gottlieb that this is an infallible guide to prognosis. In all cases of active or passive congestion of the liver there is an increase of bilirubin; Schiff found the highest amounts in patients with mitral lesions. Pigment increase has been recorded in pneumonia, but we have been unable to confirm this in five cases; it may only be present in pneumonia of the right base, thus giving rise to the belief that there is an anatomical relationship by which secondary hepatitis is produced. The great increase of urobilin in the blood of pneumonic patients cannot support the idea of a consecutive hepatic lesion, since this urobilin might be formed in the diseased lung.

The presence of jaundice in a syphilitic patient under arsenical treatment has given rise to much literature, some authors regarding it as specific but most as due to the toxic action of the drug on the liver. We have seen many cases in which treatment with neosalvarsan was followed by jaundice and phenoltetrachlorphthalein retention; rest, a non-toxic diet for the liver, and the discontinuance of the drug sufficed to dispel the jaundice, but the bilirubin increase went on for some time and increased markedly when we again injected a small dose of neosalvarsan. Two patients treated with bismuth preparations did not show an increase of pigment. The small percentage of cases in which jaundice occurs shows that it is due to a functional insufficiency in some cases produced by specific hepatitis; the determination of the bile-pigment in the blood will disclose that insufficiency. Chargin and Orgel and Covisa advise making this estimation in every syphilitic patient who has arsenical treatment to foretell those who are liable to jaundice and thus to avoid it. Schamberg and Brown suggest using it from time to time to see how the liver is reacting to the drug. Some headaches have biliary causes, and these cases can be distinguished by this test.

Takats found hyperbilirubinæmia in pernicious anæmia, while in secondary anæmia, especially if due to cancer, the amount is normal or reduced. This test is therefore useful for differential diagnosis. Gottlieb noted hyperbilirubinæmia in malaria and still more in typhoid fever. Bang says that hyperbilirubinæmia is always a symptom of severe appendicitis produced by concomitant toxic hepatitis.

*References.*


Addler, E., and Strauss, L.: Ziet. f. d. Gesamte Exp. Med., 1924, xliv., 43.
Bergh, H. van den: Presse Méd., 1921, xxix., 441.
Berghmann, G. V.: Klin. Woch., 1927, No. 17, p. 776.
Bornheim, A. R.: Jour. Amer. Med. Assoc., 1924, lxxxii., 291.
Botzian, R.: Meitteil. aus. den Grenzgebieten der Med. u. Chir., 1920, xxxii., 549.
Covisa, J.: Arch. de Med. Cir. y Esp., 1926, xxiv., 433.
Cowen, M., and Cowen, S.: Med. Jour. of Australia, 1925, i., 177.
Davis, D.: Amer. Jour. Med. Sci., 1926, clxxii., 848.
Ernst, Z., and Förster, J.: Klin. Woch., 1924, xxxi., 2386.
Frigyer, L.: Ibid., 1923, ii., 132.
Förster, J.: Ibid., 1925, iv., 1689.
Friedmann and Strauss, L.: Jour. Amer. Med. Assoc., 1924, lxxxii., 16.
Herzfeld, E.: Deut. Arch. f. klin. Med., 1922, cxxxix., 306.
Herzfeld, E., and Hämmerli, A.: Schweiz. Med. Woch., 1924, p. 141.
Jendrassik, L., and Czirke, A.: Zeitschrift f. die Ges. Exp. Med., 1928, lx., 554.
Lephene, G.: Deut. Arch. f. klin. Med., 1921, cxxxvii., 78.
Meulengracht, E.: Ibid., p. 28.
Meyer, E. G., and Knüpffer, H.: Ibid., 1922, cxxxviii., 321.
Müller, G. P., and Ravdin, E. G.: Jour. Amer. Med. Assoc., 1925, lxxxv., 86.
Perkin, F. S.: Arch. Internal Med., 1927, xl., 195.
Piotrowski, G.: Presse Méd., 1925, p. 1222.
Ravdin, Glenn: Amer. Jour. of Med. Sci., 1925, clix., 850.
Rouillard, J.: La Médecine, 1926, x., 767.
Scherk, G.: Arch. f. Verdauungs-krankh., 1926, xxxvii., 344.
Schiff, L.: Arch. Internal Med., 1927, xl., 800.
Stetten, De W.: Ann. of Surg., 1922, lxxvi., 191.


# THE ICTERUS INDEX OF THE BLOOD SERUM.


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AT the present time clinicians are showing a markedly increased interest in the study of diagnostic methods designed to increase our knowledge of the functional activity of the liver.

Probably the latest development in liver function tests is that described by Bernheim,[1] called the icterus index. This index is an estimation of the bilirubin content of the blood serum; it is not a true quantitative estimation, but an estimation by means of a colorimeter of the intensity of the staining of the serum by bilirubin as compared with an arbitrary standard of colour. Variations in the normal amount of bilirubin in the serum are caused by: (1) disturbances of the biliary system, (2) hæmolytic conditions, (3) toxic conditions, and it is claimed by Bernheim that by means of the icterus index a hyper-

bilirubinæmia caused by any of the above can be detected and that, once detected, the variations in the icterus index in different diseases are of value in diagnosis, treatment, and prognosis.

I have carried out observations on a series of cases of various diseases with a view to confirming Bernheim's findings. The results obtained were not perhaps quite so consistent as those of Bernheim and other American writers, but the general impression obtained from the results to be given below was that in the icterus index we have a simple and accurate test for hyperbilirubinæmia which, if used in correlation with the clinical findings of the case, is of value in diagnosis, treatment, and prognosis.

### *Technique.*

Venous blood is allowed to clot and the serum pipetted off and centrifuged until clear. The serum is then compared in a Dubosc colorimeter with an arbitrary standard of 1 in 10,000 potassium dichromate (0·05 g. in 500 c.cm. of distilled water). The indicator on the scale of the standard solution is set at a suitable figure (e.g., 15 or 20), and a reading of the "unknown" serum is taken at the point on its scale at which the two solutions match. The index is then calculated by dividing the reading of the standard by that of the unknown. With deeply pigmented sera dilution may be necessary before an accurate reading can be obtained. This dilution must be made with normal saline, and when the calculation is made the figure obtained must be multiplied by the number of dilutions. Thus we find that the deeper the colour of the serum the higher the icterus index.

### *Errors and Fallacies in Technique.*

1. The standard solution becomes paler on exposure to light. The addition of two drops of sulphuric acid per 500 c.cm. will preserve the colour.

2. The serum must be clear when the reading is taken, cloudy or lipæmic sera giving high faulty readings. Serum usually becomes opaque if allowed to stand for more than 24 hours, and is also cloudy during the ingestion periods.

3. Hæmolysis must be avoided, either by using dry sterilised needles to withdraw the blood or by washing syringes and needles in normal saline.

Several modifications of Bernheim's technique have been described. Both Brown[3] and Murphy[3] have devised methods which consist primarily in the comparison of the "unknown" serum with a series of dilutions of potassium dichromate in standard tubes. A similar method described by Davis[4] makes use of capillary blood, thus avoiding venepuncture.

The serum from 55 normal persons was examined and in every case the index lay between three and six. Also, in every case in the series with an index over six there was some pathological condition present. Normal indices, as was expected, were also found in some diseases such as renal, venereal, and gynæcological conditions, gastric ulcer and carcinoma of the stomach, rheumatic fever, and tuberculosis.

### *Gall-bladder Dysfunction, Duodenal Ulcer, and Appendicitis.*

Sixteen cases of proved gall-bladder disease were investigated. Twelve showed active cholecystitis or cholelithiasis with obstructive symptoms; only five showed clinical jaundice. All gave indices between 10 and 50, and in every case the index returned to normal after operation. The remaining four cases showed indolent cholelithiasis and normal indices. It follows then that, while the icterus index will not indicate the mere presence of gall-stones, a raised index will appear as soon as there are any signs of active disease, even in the early stages before clinical jaundice appears. De Wett Stetten,[5] who showed that cases of suspected stomach disorder showing indices of nine or ten were found at operation to be biliary disease, suggested that the icterus index is a means of differentiating renal and biliary colic, acute appendicitis, and perforated duodenal ulcer. This is true up to a point, but my results do not enable me to make a definite distinction between all four.

Pathological renal conditions do not raise the icterus index, which fact may make a differential diagnosis between renal and biliary colic. It is with acute appendicitis and duodenal ulcer, however, that difficulty arises. Nineteen cases of appendicitis were examined, five showed indices between 6·1 and 7·8, and seven showed normal figures. The remaining seven were cases of chronic appendicitis and showed normal indices. Of 19 cases of duodenal ulcer, ten gave indices between 6·4 and 8·6; six gave normal figures, and three, which had recently had hæmatemesis, showed subnormal indices. In both these conditions then, as in biliary dysfunction, the icterus index may be raised. This at first sight may seem to confuse the issue, but it was found that the lowest index obtained in active biliary dysfunction was ten, whilst the highest due to duodenal ulcer was 8·6. One may therefore conclude that an index of nine or over points to gall-bladder trouble rather than duodenal ulcer or appendicitis.

The figures obtained with duodenal ulcer and acute appendicitis are more confusing. The former gave figures between 3·4 and 8·6, and the latter figures between 3·8 and 7·8. This does not enable one to differentiate the two conditions by the icterus index alone, although the average index (6·2) of duodenal ulcer as against the average of 5·5 for acute appendicitis shows a tendency to a higher figure in the former disease. The icterus index, therefore, is of little value in differentiating acute appendicitis and perforated duodenal ulcer. American writers regard a raised index as a constant accompaniment of duodenal ulcer and as a means of differential diagnosis from gastric ulcer, which shows normal figures. My figures did not show a constantly raised index in duodenal ulcer, though—as gastric ulcer invariably shows a normal index—in cases where the diagnosis lies between the two a raised index would indicate the former.

From the fact that the icterus index returns to normal after operation for gall-bladder disease it is reasonable to deduce that a raised post-operative index is indicative either of an overlooked gall-stone in the duct or, in old-standing cases, of an associated hepatitis, both of which involve a less favourable prognosis.

The icterus index is of great value in cases of frank or suspected jaundice where the need of a simple and practical method of accurately estimating the degree of jaundice present at a given time has long been felt. I investigated 13 cases of jaundice and found in all that the index rose or fell as the jaundice increased or diminished. The indices obtained varied from 14·2 to 243·2. It is generally agreed that 15 is the index at which clinical jaundice appears, though I have found it possible to have indices above 15 for a few hours with no clinical jaundice and vice versa, owing to the hyperbilirubinæmia being demonstrable before the tissues took on the icteric hue.

The advantages of a method of estimating the degree of jaundice and also its daily fluctuations are obvious when one considers, for example, the differential diagnosis between carcinoma of the head of the pancreas and an impacted stone in the common duct. The index is valuable, moreover, in assessing operative indications. In a case of biliary obstruction by stone, for example, it will permit us to determine increase or decrease of the jaundice, thus enabling us to decide whether to operate before the jaundice is too far advanced or to wait until it has subsided. The icterus index will probably prove of great value in the detection of jaundice in coloured races.

### *Hyperemesis Gravidarum, Pernicious Anæmia, and Secondary Anæmia.*

Only two cases of hyperemesis came under observation, but in both the icterus index was raised, the figures being 8·1 and 10·7; the latter patient died. It seems probable that, if the icterus index behaves in these cases as in other diseases, it might be of value in prognosis if successive readings were made, and also in determining whether termination of pregnancy was advisable.

In eight cases of pernicious anæmia the index was raised to between 7·8 and 20, the last case being jaundiced. All were treated by liver; in every case there was a marked improvement in the blood picture in five weeks and the index fell to normal in the same period. It seems, therefore, that we have in the icterus index an additional indication of the prognosis of the disease. The fact that there is a raised index in pernicious anæmia and a subnormal one in carcinoma of the stomach provides an additional means of diagnosis.

Nine cases of secondary anæmia showed a low index, between 2·1 and 3·6. These low figures open up the possibility of a fallacy in icterus index readings, as it has been found that a patient suffering from a disease which usually raises the index, but who also has a secondary anæmia, sometimes shows a normal index, but always a much lower one than is to be expected from the principal condition.

*Cardiac Disease.*

Of seventeen cases of cardiac disease, twelve showed decompensation and the index varied from 6·9 to 25, and in every case rose or fell as the clinical condition became worse or improved. The remaining five cases with no decompensation showed normal figures. Bernheim states that every case in her series with an index over 12·5 died within a few weeks. My observations bear this out, and it seems that we have in the icterus index a method of following the progress of cases of heart failure, which is so difficult to estimate by clinical observation alone.

*Cases under Arsenical Treatment.*

Owing to the well-known vulnerability of the liver to arsenic, any test which could be employed as a routine and which would indicate the toleration of the liver for the drug would be of great value, for example in the treatment of syphilis by prolonged courses of arsenic. Twenty-two cases of syphilis under intravenous arsenical medication were examined, and the icterus index was taken every three weeks for varying periods. It was found that in the majority of cases the index remained normal, even after prolonged treatment. In a large percentage, however, there was a rise in the index at the commencement of treatment, followed by a gradual fall. In some cases the index rose above normal at this stage. This rise is apparently due to the toxic effect of the arsenic in persons unaccustomed to it, the return to normal denoting acquired tolerance. Two cases of arsenical dermatitis both gave a raised index which fell to normal with the cessation of treatment. In one of the cases when treatment was recommenced the index again rose above normal, to subside once more when a second "rest" was given. Two cases of arsenical hepatitis, both with clinical jaundice, showed markedly raised indices, one being 243·2, the highest in my series. In both cases the index fell to normal as they recovered under treatment.

The icterus index, therefore, anticipates toxic effects from arsenic. The blood can easily be withdrawn when giving an injection and should be examined at regular intervals. Patients with indices within "the period of latent jaundice" (i.e., 6 to 15), should be watched carefully, and a steady rise of the index through that period must be regarded as a danger signal. Similarly, in cases recovering from toxic hepatitis, a raised icterus index is a contra-indication to the recommencement of arsenical treatment, despite the disappearance of clinical jaundice.

*Pneumonia.*

Eight cases of pneumonia showed indices between four and ten. Bernheim gives an index of 7·5 as the limit for a definitely favourable prognosis in pneumonia. My results bear this out, in that every case under 7·5 recovered and the higher the index the worse the clinical condition, but it is not possible to be dogmatic in prognosis since, though a high index is definitely less favourable, it has been shown by Bernheim that patients with an index as high as 15 may recover.

The chart shows at a glance the figures obtained in various diseases. It has been suggested that by comparing the index of any given case with the chart

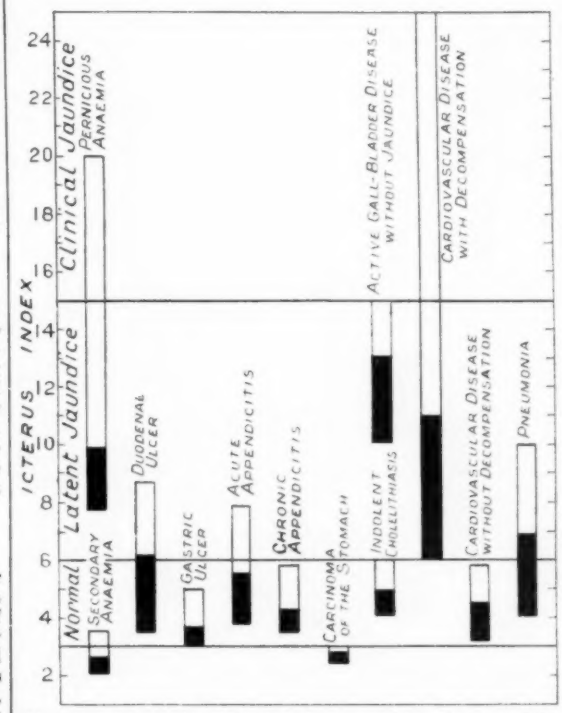


Diagram showing the icterus index in various diseases. The solid black areas represent the minimum to the average index. The white areas represent the average to the maximum index.

it would be possible to make a diagnosis. This, of course, is impossible, owing to the "overlapping" of the indices in various diseases, and one must deprecate any tendency to use the icterus index as a specific test while emphasising the necessity of bearing in mind the clinical findings in every case, the index to be used as an additional factor in diagnosis.

In conclusion, I would emphasise particularly the value of the index in: (1) distinguishing biliary conditions from renal, gastric, duodenal, and appendicular conditions; (2) differentiating carcinoma of the stomach and pernicious anæmia; (3) controlling toxic effects due to arsenical medication; (4) detecting variations in clinical jaundice.

*References.*

1. Bernheim, A. B.: Jour. Amer. Med. Assoc., 1924, lxxxii., 291.
2. Brown, A. L.: Arch. Path. and Lab. Med., 1927, iii., 409.
3. Murphy, W. P.: Boston Med. Jour., 1926, cxciv., 297.
4. Davis, D.: Amer. Jour. Med. Sci., 1926, clxxii., 848.
5. Stetten, De Wett: Ann. Surg., 1922, lxxvi., 191.

DONATIONS AND BEQUESTS.—Sir John Robinson, of Worksop Manor, Notts, brewer, besides other bequests, left all his stock, shares, debentures, and other interests in the New Leicester Club and County Racecourse, Ltd., for division into ten parts, of which he left four parts each to the Nottingham General Hospital and the Victoria Hospital, Worksop, and one part each to St. Dunstan's Hostel for the Blind and the Nottingham and Nottinghamshire Adult Deaf and Dumb Society; £5000 for the endowment of almshouses, and £5000 to St. Dunstan's Hostel for Blinded Sailors and Soldiers.—Mr. Frederick Victor Johnson, of The Limes, Barlaston, Stoke-on-Trent, left £1000 to the North Staffordshire Royal Infirmary.

# LIVER THERAPY IN SECONDARY ANÆMIA.

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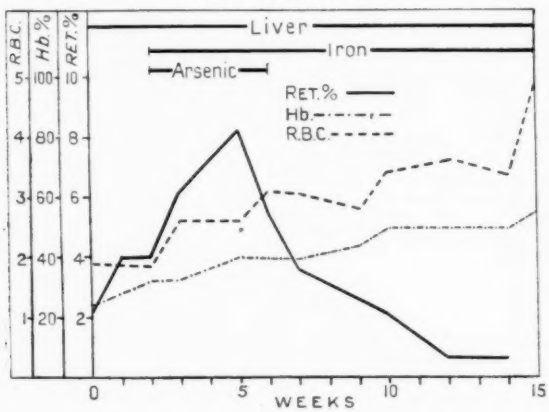
THE efficacy of liver, either as whole gland or in some suitable preparation, in restoring to normal the blood picture in primary or pernicious anæmia is now one of the firmly established facts of medicine. Its effects in secondary anæmia are by no means so clear. So startling were the early results obtained by liver treatment in pernicious anæmia and so relatively meagre the results in the secondary anæmias that there was an initial tendency to deny any usefulness to this form of therapy in the treatment of any form of anæmia other than Addisonian. The experimental work of Whipple, Robscheit, and Minot and Murphy, which led to the application of liver therapy to the treatment of pernicious anæmia, was carried out on dogs rendered anæmic by repeated bleedings and therefore suffering from secondary anæmia, and it is difficult to believe that what was experimentally found to be effective in dogs should not be clinically effective in human beings. How carefully this experimental work was controlled and how accurately the response to treatment was estimated can only be appreciated by a study of the original papers. It is, however, open to doubt whether under the less carefully controlled conditions of clinical work the responses obtained would have been regarded as definitely significant; certainly they were not of the same order as those obtained by the use of liver in human pernicious anæmia.

The present investigation was undertaken to ascertain whether any definite response to liver therapy could be obtained in human secondary anæmia. One reason for our lack of knowledge on this subject is undoubtedly the fact that secondary anæmias do not constitute a well-defined entity like Addisonian

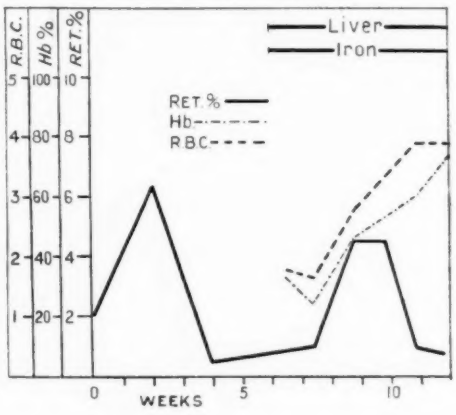
FIG. 1 (Case 1).




anæmia. They form a large and amorphous group falling roughly into two classes, depending upon whether the anæmia is due to hæmorrhage, acute or chronic, or to the action of some "toxin." In anæmia following acute hæmorrhage it is almost impossible to disentangle the effects of therapy from the natural recovery process; in cases associated with chronic hæmorrhage the response to therapy is obscured by the possible continuance of the bleeding, and in cases due to the action of "toxins" treatment must be directed to the eradication of the toxin; when this has been accomplished it is impossible to differentiate the results of the treatment from that directed immediately towards remedying the anæmia.

The mere study of the red cell count and hæmoglobin content of the blood will in many cases give little valuable information about the response to treatment. Some help, however, may be given by the "reticulocyte response." It has been shown by Greener and the present author[1] and by many others that the

FIG. 2 (Case 2).




immediate effect of the application of liver therapy to a case of pernicious anæmia is the appearance in the blood stream of many reticulated red cells or reticulocytes; this "reticulocyte response" is invariable in cases responding well to treatment and serves as a most valuable index to the degree of the response. In secondary anæmia Vaughan[2] has been able to find evidence of this response, though not of the same order as that in primary anæmia. Minot, Murphy, and Stetson[3] also found definite evidence of a reticulocytosis in certain though not all of their cases of secondary anæmia. These authors, working mainly on pernicious anæmia, appear to have established a very high standard of response; they do not publish full tables of their results in secondary anæmia, but it appears from their discussion of these cases that had they accepted a lower standard many more of their cases would have been accepted as showing a response. Various other authors have brought forward evidence of the beneficial effects of liver therapy in cases of secondary anæmia without, however, having paid any attention to the reticulocyte response; among these Molfino [4] has reported striking results.

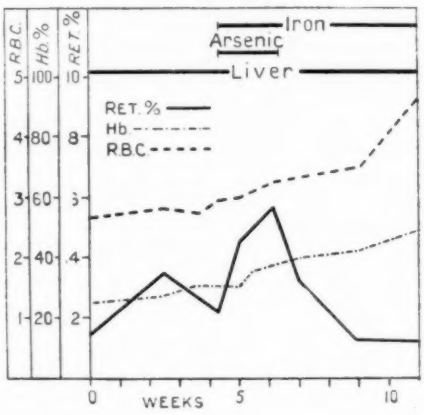
I have tested the response of a dozen cases of secondary anæmia to liver treatment. In many of these cases the anæmia was of long duration and in some it proved impossible to trace its source. In five, however, the anæmia definitely dated from a hæmorrhage or a series of hæmorrhages, in two due to gastric ulceration, and in the remaining three associated with parturition or abortion. Of all the cases investigated only these five showed definite improvement under the liver treatment. In four there was a definite increase in the reticulocyte percentage early in the course of the liver treatment; one case failed to show a response. In the cases showing a reticulocyte response the exhibition of the liver was followed by an increase in the red cells and in the hæmoglobin percentage; in the one case showing no response there was no increase in the red cells, and such improvement as occurred in the hæmoglobin percentage may, with some probability, be attributed to the action of the iron given with the liver.

### *Cases showing Reticulocyte Response.*

CASE 1.—Female, aged 41, had a history of indigestion for two years; ten days before admission she had vomited about two cupfuls of blood and thereafter brought up small

quantities at irregular intervals. There was also melæna. She was admitted on March 24th, 1928, and was treated by alkalis and diet until April 18th, when, although the melæna had ceased, it became apparent that the anæmia was not improving. A blood count showed 1,990,000 red cells per c.mm., hæmoglobin 25 per cent., and reticulocytes 2·4 per cent. of red cells. At this time it was discovered that the patient was three months pregnant. She was placed on a dose of two ounces of liver extract (Oxo)

FIG. 3 (Case 3).




daily. On May 15th a mixture of iron and arsenic was added. On May 29th this was replaced by pil. ferri, grs. 5, t.d.s. The progress is shown on Chart 1.

CASE 2.—Male, aged 57, had a severe hæmatemesis on July 1st, 1928, and was admitted on the following day. He was very pale, had much melæna, and his pulse was feeble. He was treated by alkalis and diet with much improvement; melæna persisted until July 14th. He was discharged on August 20th considerably improved but still anæmic. At this date the blood showed hæmoglobin 30 per cent. and red cells 1,890,000 per c.mm. On August 27th the patient was seen again and it was obvious that he was making no further improvement. His red cells numbered 1,810,000 per c.mm., and his hæmoglobin 25 per cent. He was treated as an out-patient on liver extract (Oxo), half an ounce thrice daily, and pil. ferri, grs. 5, t.d.s. Subsequent progress is shown on Chart 2.

CASE 3.—Female, aged 37, had had ill-health since the birth of her last child two years previously, at which time she had lost a great deal of blood. She was seen as an out-patient on April 21st, 1928, when she was pale, had œdema of the ankles, a large ulcer on the right shin, and a loud, rough mitral systolic bruit. The Wassermann reaction was negative, the hæmoglobin 26 per cent., and the red cells 2,620,000 per c.mm. She was admitted on May 7th, and treated by liver extract ("Hepatopson"), half an ounce thrice daily. As shown in Chart 3, the blood picture improved until May 22nd, when the condition became stationary. The patient was then put on a mixture of iron and arsenic; from June 4th this was replaced by pil. ferri, grs. 5, t.d.s., with liver extract as before. Her subsequent course is shown on Chart 3.

CASE 4.—Female, aged 42, had an abortion on Dec. 16th, and was curetted on Dec. 19th, 1928. Since then she had been very pale and weak with swelling of the ankles. The hæmoglobin was 27 per cent., the red cells 1,310,000 per c.mm., the colour-index 1·04, and the reticulocytes 1·6 per cent. of red cells. She was admitted on Jan. 10th, 1929, and treatment commenced with liver extract (Oxo), two ounces daily, and pil. ferri, grs. 5, four times daily. Four days later the hæmoglobin had risen to 29 per cent. and the red cells to 2,300,000 per c.mm., while reticulocytes were present to the extent of 8·4 per cent. of red cells. This striking response, together with the rather high colour-index at the first count, led to the suspicion that this might be a case of pernicious anæmia. That this was not so was shown by the presence of free hydrochloric acid in normal amounts in all specimens from a fractional test-meal. The subsequent progress of the case is shown in Chart 4.

*Case showing no Reticulocyte Response.*

CASE 5.—Female, aged 25, had a post-partum hæmorrhage on July 4th, 1928, since when she had been pale and easily tired. She was seen as an out-patient on Oct. 8th, when she was still nursing the child, and her hæmoglobin was 39 per cent., her red cells 4,100,000 per c.mm., and her reticulocytes 1·3 per cent. of red cells. She was treated as an out-patient with liver extract (Oxo) two ounces daily, and pil. ferri. grs. 5, t.d.s. The red cell count showed little alteration and four months from the commencement of treatment still stood at 4,300,000 per c.mm. The reticulocytes also showed no increase at any time during the exhibition of the liver extract. The hæmoglobin, however, rose steadily until by February, 1929, it stood at 70 per cent. The general condition of the patient steadily improved. It is probable that in this case the improvement was entirely due to the iron.

In using the reticulocyte percentage to gauge the response to therapy which aims at the stimulation of blood formation after hæmorrhage, it is very necessary to bear in mind that hæmorrhage alone is followed by a marked increase in these young red cells. Chart 5 shows the response in a patient who had a severe gastric hæmorrhage and who received no treatment but rest, alkalis, and diet. The graph is plotted from the fourth day after the hæmorrhage and shows the reticulocytes standing at 8 per cent. of the red cells; four days later they have dropped to the neighbourhood of 2 per cent., a level which they thereafter maintain in spite of a progressive improvement in the blood picture. The normal response of the reticulocytes to hæmorrhage is also shown in Case 2, in which, before the commencement of any treatment aimed at the improvement of the blood picture, they attained a level of 6·1 per cent. Six weeks later they had fallen to about 1 per cent. and the patient was becoming more and more anæmic. This is an illustration of the fact, further exemplified by Cases 1 and 4, that in certain instances of anæmia due to hæmorrhage the production of reticulocytes may fall in spite of the demand for new red cells.

*The Value of Iron.*

Minot, Murphy, and Stetson, in the paper referred to above, have produced evidence that in the secondary anæmia which they produced by controlled bleedings in their dog experiments, improvement of the blood

FIG. 4 (Case 4).

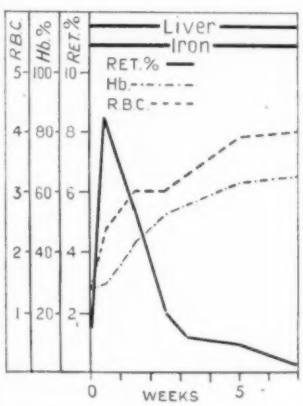
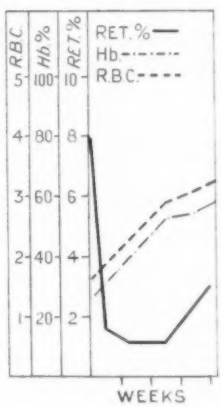



FIG. 5 (Case 5).




picture could be brought about either by liver or by iron. They further state that "the influence of feeding large amounts of liver or liver extract with large doses of iron can sometimes produce an effect which is not observable from the administration of either alone."

Some light is thrown upon the effect of the administration of iron along with liver by Cases 1 to 4. In Case 1 it will be seen that after two weeks' treatment by liver alone the blood count had, in spite of an initial rise of the reticulocytes to 4 per cent. of the red cells, become stationary. When iron and arsenic

were given the reticulocytes rose rapidly to 6·1 and later to 8·2 per cent. and the blood count again improved, an improvement which was maintained in spite of a later fall of the reticulocyte percentage. This rise was maintained after the arsenic had been discontinued and the patient was on iron and liver alone. In Case 3 the same phenomenon appears. In spite of a slight rise in the reticulocytes, the blood count as a whole showed little improvement on liver treatment alone for four weeks; on the exhibition of iron and arsenic the reticulocytes rose to nearly 5 per cent., and the improvement in the blood count was maintained when the arsenic was stopped.

The continued improvement of the blood count in these two cases, after the withdrawal of the arsenic and while the patients were on liver and iron alone, raised doubts as to the efficacy of arsenic in cases of this sort. The effect of iron and liver only is shown in Cases 2 and 4. In Case 2 a good reticulocyte response followed liver therapy, but unfortunately in this case the behaviour of the red cells was not observed during this period. Six weeks from the commencement of the liver therapy the patient was put on iron as well; this was followed by a rise of the reticulocytes to over 4 per cent. and by the rapid improvement of the blood picture, shown in the graph. Case 4 received iron and liver from the initiation of treatment, a fact which may account for the very marked reticulocyte response shown by this case, and for the rapid improvement of the blood picture. In Cases 1 and 3 the improvement in the blood picture persisted after the arsenic had been dropped.

The series is too small to justify any extensive deductions, but it shows quite clearly that in certain cases of secondary anæmia following hæmorrhage liver or a suitable liver extract has a markedly beneficial effect in improving the blood picture and, further, that this effect is enhanced by the use of iron along with the liver. The fact that those cases in which there was a reticulocyte response early in the course of liver treatment showed an increase in the number of red cells, while the one case in which this response was lacking showed no such increase, appears to indicate that any extensive rise in the blood count must be preceded by the appearance in increased numbers of these young red cells, and that unless a reticulocyte response occurs an increase in the total number of red cells is not to be expected. Case 5 illustrates the necessity of making a distinction between improvement in anæmia due to increase in the hæmoglobin percentage, to increase of the total number of red cells, and to both.

It is probably significant that the four cases which showed both a reticulocyte response and an improvement in the blood picture were all suffering from shortage of red cells resulting from old or recent hæmorrhage. A large hæmorrhage is usually followed by speedy blood regeneration, but in certain cases there appears to be a failure of blood restitution which, as in Case 3, may persist over a long period. In these cases of failure of blood regeneration after hæmorrhage, liver, particularly in combination with iron, appears to have great value.

*Conclusions.*

1. In certain cases of secondary anæmia liver therapy is effective in causing a reticulocyte response and in raising the blood count.

2. The best results are to be looked for in those cases of secondary anæmia due to failure of blood regeneration after hæmorrhage.

3. The effect of the liver therapy is greatly enhanced by the simultaneous exhibition of iron.

*References.*

1. Dyke, S. C., and Greener, Joan: THE LANCET, 1928, i., 1068.
2. Vaughan, Janet: THE LANCET, 1928, i., 1063.
3. Minot, G. R., Murphy, W. B., and Stetson, R. P.: Amer. Jour. Med. Sci., 1928, clxxv., 5.
4. Molfino, A. H.: Semana Med., 1928, xxxv., 725.

# Clinical and Laboratory Notes.

## A NOTE ON SPINAL ANÆSTHESIA.

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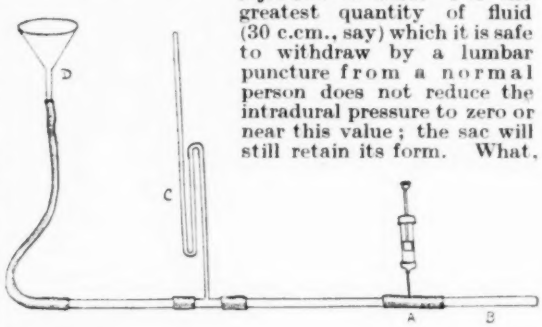
A FEW months ago some observations on the use of a heavy solution of novocaine for the production of spinal anæsthesia were published in THE LANCET.[1] The paper provoked some discussion on the manner of spread of an anæsthetic agent in the spinal canal. That precise knowledge of this subject does not exist was the one certain fact which emerged. It supplied the stimulus for a further study of the phenomenon. The result has been the development of a very simple technique for spinal anæsthesia, which as far as can be judged from a small experience, is an unusually reliable method of ensuring the spread of the anæsthesia to a segment high enough to permit of operations in the upper abdomen.

*Physics of the Dural Sac.*

The dural sac is composed of inextensible white fibrous tissue. A sac removed post mortem was found to accommodate 30 c.cm. of liquid from the level of the fourth cervical segment to the lower end. The appearance of the flaccid dural sac when exposed by dissection of the dead body is, however, not a true picture of what exists in life. For the subarachnoid pressure varies between 12 and 20 mm. Hg, whereas the pressure between the dura and bony wall of the spinal canal is of the order of −1 to −18 mm. Hg.[2] The inevitable result is that the dural sac always assumes its maximal capacity. In other words, its transverse section is always a circle and it is incapable by any deformation of increasing its internal volume. It might from this point of view have rigid walls; it would act no more impassively in the withdrawal or injection of fluid. For the greatest quantity of fluid (30 c.cm., say) which it is safe to withdraw by a lumbar puncture from a normal person does not reduce the intradural pressure to zero or near this value; the sac will still retain its form. What,




then, takes the place of the evacuated fluid? It is taken by an increase in the size of the numerous thin-walled vessels which lie within the spinal and cranial cavities. But here it is to be noted that the large vessels in the spinal canal are confined to the region of the cord. They are not present below in the region of the cauda equina. Suppose, then, a definite volume of liquid be injected into the spinal dural sac at the level of the second lumbar interspace. As it is slowly injected it is likely to find its path blocked in the caudal direction because the sac is distended to its fullest capacity, and there are not here present thin-walled vessels which can diminish in size to make room for the introduced fluid. It will have to travel cranialwards.

[1] Pannett, C. A.: Hunterian Lecture on Local Anæsthesia in Upper Abdominal Surgery, Feb. 9th, p. 271.

[2] Heldt, T. J., and Moloney, J. C.: Amer. Jour. Med. Sci., 1928, clxxv., 371.

How far up it will reach will depend upon its volume. That such is the distribution of an injected fluid under the conditions assumed is proved by a simple experiment with the apparatus shown in the Figure.

The blind end B represents the closed lower end of the dural sac; the open funnel D acts as the compressible vessels in the brain and cord; the manometer C registers the pressure. A coloured dye injected at A through the rubber tube is seen to flow only towards D and to spread scarcely for any distance at all towards B. If it is of greater specific gravity than the contained fluid it will soon settle down to the lower half of the tube, and then its movement will be dependent upon the slope of the whole apparatus.

*Conditions in Life.*

Are the conditions in life comparable with those of such an experiment? Obviously, if there is an active circulation of cerebro-spinal fluid a disturbing factor will be at once introduced. The statement [3] that cerebro-spinal fluid secreted within the skull passes down the posterior part of the spinal canal behind the cord and returns upwards along its anterior surface is not warranted by experimental facts. It seems certain that absorption does occur through the endoneural lymph spaces of Retzius, but the whole circulation is a very sluggish one when the dura is intact. In the rabbit under urethane anæsthesia a dye injected under the dura has scarcely spread at all after the lapse of one hour. It is true that Weed [4] states that potassium ferrocyanide and iron ammonium citrate injected into the lumbar sac travelled up the whole spinal sac and filled it and the basilar spaces very speedily, but a perusal of his records reveals the fact that in all his experiments the injected fluid was at a considerably higher pressure than the cerebro-spinal pressure of the animals used. Naturally, under these circumstances the large vessels in the spinal canal and cranial cavity contracted to allow the new fluid room. All he really did was to push the cerebro-spinal fluid out of the canal into the cranial cavity, the very phenomenon which our above-mentioned experiment with the apparatus demonstrated to be possible.

A further argument has been adduced to prove that fluid passes upwards from the spinal canal to the brain. When a spinal cord tumour blocks completely the dural sac it is found that the composition of the fluid below is different (appearance of protein for one thing) from that of the fluid above, and it is said that this is due to the accumulation of the products of metabolism which now have their upward path of escape shut to them. But there is a much better explanation. Below the block the mechanism of absorption from around the nerve roots remains intact; it still goes on, whereas renewal from the choroid plexuses above is prevented. The space formerly occupied by the absorbed fluid would now seem to be taken by an exudation from the blood-vessels. Hence the change of composition. Based upon such reasoning the following technique of high spinal anæsthesia was devised.

*The Technique of High Spinal Anæsthesia.*

A preliminary injection of morphine (to allay anxiety) and atropine (to inhibit the vagus since it works unopposed as the cardio-accelerator nerves are blocked) is given. The patient is made to curl up lying on his left side. The space between the second and third lumbar spines is then anæsthetised with 1 per cent. novocaine and the spinal anæsthetic needle, which is 7·5 cm. long and only 0·8 mm. in diameter, is introduced into the dural sac. Eight cubic centimetres of cerebro-spinal fluid are slowly withdrawn into a 10 c.cm. syringe which is detached and the needle in situ occluded with its own obturator. Through the nozzle of the syringe 1 c.cm. of 15 per cent. novocaine in distilled water is introduced into the 8 c.cm. cerebro-spinal fluid, space having been made by further withdrawal of the piston. The novocaine is drawn into a 1 c.cm. syringe provided with a hypodermic needle to enable this to be done. The hypodermic needle is then fixed to the large syringe to allow it to be turned up and down to ensure proper mixing. All air is expelled, the hypodermic needle detached, and the syringe fitted to the lumbar needle whose stylet is removed. The 9 c.cm. of liquid containing the dose of novocaine is slowly injected, the patient turned on to his back, and the head end of the table sloped downwards 5° or 10° since the specific gravity of the injected fluid is necessarily raised somewhat. This volume of fluid will reach up to and bathe the third or fourth dorsal nerves. The concentration of novocaine in it is about 1·66 per cent.—i.e., sufficiently strong to soak into nerve trunks. It should never be forgotten that the power of penetration into nerve tissue is a function of the concentration of novocaine. If it is too low no anæsthesia will be obtained. When the patient is turned over 50 mg. ephedrine are injected hypodermically. In ten minutes' time the surgeon may begin his work, but he must get done what he wants to do in one hour. This is the only drawback to spinal anæsthesia. It is usual in any operation done under local anæsthesia with novocaine to find sensation returning in an hour. It is not peculiar to the spinal method. A drug which will produce prolonged anæsthesia is much wanted.

This preliminary note is published because the method so simple has proved so extremely satisfactory and does appear to be based upon sound physiological and mechanical principles. The method described should, however, be meticulously followed.

[3] Jackson, H.: Jour. Amer. Med. Assoc., 1922, lxxix., 1394; Levinson, A.: The Cerebro-Spinal Fluid, London, 1923.

[4] Weed, L. H.: Physiol. Reviews, 1922, ii., 171.

## A "PERMANENT WAVER'S" CRAMP.

By G. Arbour Stephens, M.D., B.Sc. Lond.,
consulting cardiologist, king edward vii. memorial hospital.

A young woman, aged 21, after four years' strenuous employment as a "permanent waver," was compelled to give up work on account of severe pain in the right wrist.

On examination it was found that she was suffering from teno-synovitis over the lower part of the right forearm.

She complained of nothing else; her appearance was quite healthy and she said her appetite was very good. On further examination it was found that there was a marked hypersensitiveness over the areas shaded in the

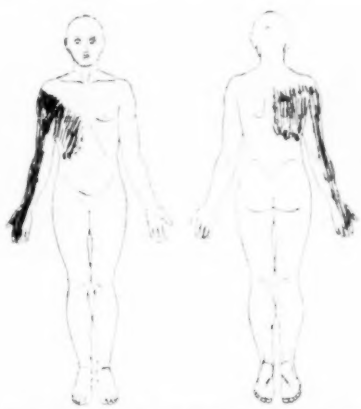


Diagram showing the hypersensitive areas.

figures corresponding to the parts supplied by the fifth, sixth, and seventh cervical nerves and by the second to the eighth dorsal nerves on the right side of the body.

The work of a "permanent waver" is very strenuous as it means standing for several hours every week, oftentimes in awkward positions, in a badly ventilated room. In order to produce a satisfactory æsthetic

effect, a considerable amount of tension needs to be applied, and it is in the application of this tension that the strain is placed upon the muscles of the right forearm. The patient is a well-built young woman who gets her exercise by rowing, but owing to a very serious accident to a member of the family there is no doubt that the tone of her general nervous system has been disturbed.

## A CASE OF NEPHRITIS.

By E. Wordley, M.D. Camb., M.R.C.P. Lond.,
PATHOLOGIST TO THE SOUTH DEVON AND EAST CORNWALL HOSPITAL, PLYMOUTH.

THE following case of nephritis is described in some detail because I believe that it presents some unusual features. It is a case of chronic azotæmic nephritis of quite sudden onset in a young adult.

*Family history.*—Father died of uræmia, aged 58, in December, 1927. Mother alive and healthy; one brother, aged 36, in good health.

*Past history.*—Had scarlet fever when 5 years old, no other illnesses. Patient had worked as a painter since he was 14. For the past year he had worked in Devonport Dockyard at heavy manual work and could do anything a normal man could do without any headache, fatigue, or shortness of breath.

*History of present illness.*—Was in perfect health until about the time of his father's death in December, 1927. This appeared to upset him. About January, 1928, he first noted some impairment of health. He used to get dizzy while at work and was easily tired and rather short of breath. He continued at full work until the beginning of June, 1928, though with increasing difficulty. He consulted his doctor at this time on account of the dizziness and palpitation. Albumin was noted in the urine, but no other physical signs. Some blood was taken for urea estimation, when the surprising figure of 443 mg. per cent. was obtained. He was forthwith admitted to hospital, and by the kindness of Dr. A. B. Soltau he was admitted under me for further investigation.

*Condition on admission.*—On admission, July 8th, 1928, he complained of very little; the palpitation for which he had previously consulted his doctor had passed off, and except for a feeling of lassitude and an unpleasant metallic taste in the mouth, said he felt fairly well. He was a bright-complexioned man and did not look anæmic. The cardiac impulse was in the nipple line. The heart sounds were normal in character. The blood pressure was 128/90 mm. Hg. No œdema was present. No abnormal physical signs in respiratory system or abdomen or central nervous system. Teeth good, no blue line. Urine: specific gravity, 1010; reaction acid; albumin, 0·1 per cent.; no casts or cells present.

| Date. | Blood-urea. | Uric acid. | Creatinine. | Plasma phosphates. | (*a*) Calcium, (*b*) Cholesterol, (*c*) Blood-sugar. | Blood pressure. | Red cells (millions). | Hb. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|
| 1928. | | | | | | | | | |
| 2/7 | 443 | — | — | — | — | 135/90 | — | — | U.-c.t. 1. 1·2 |
| 4/7 | 425 | — | — | — | — | — | — | — | — |
| 9/7 | 330 | — | — | — | (*c*) 0·131 | — | 2,400 | 38 | On admis. |
| 11/7 | 490 | — | — | — | — | — | — | — | — |
| 18/7 | 350 | — | — | 10·3 | (*a*) 9·84<br>(*c*) 0·312 | — | — | — | — |
| 25/7 | 212 | 7·8 | 4·9 | 10·6 | (*c*) 0·181 | — | 2,200 | 39 | P.p. 4% |
| 7/8 | 241 | 6·2 | 6·9 | 8·7 | — | — | 2,600 | 36 | U.-c.t. 0·7<br>0·8 |
| | | | | | | | | | P.p. 3·9 |
| 15/8 | 210 | 6·6 | 4·6 | 7·7 | — | 124 | 1,800 | 32 | P.p. 4·5 |
| 22/8 | 232 | 7·2 | 4·6 | 6·4 | — | 138/90 | — | — | — |
| 29/8 | 240 | 6·9 | 4·8 | 7·6 | (*a*) 9·4<br>(*b*) 23·6 | 132/90 | 1,800 | 32 | — |
| 4/9 | 212 | 7·6 | 7·5 | 8·3 | — | — | 1,900 | 33 | — |
| 12/9 | 188 | 4·4 | 6·6 | 6·1 | (*b*) 0·241 | 128 | — | — | — |
| 24/10 | 195 | 5 | 5 | — | — | 125 | 3,500 | 55 | P.c. 420 |
| 19/11 | 228 | 7·36 | 12·7 | 6·8 | — | 120 | — | — | — |
| 17/12 | 298 | 9·6 | 11·8 | — | — | 140 | 3,100 | 44 | — |
| 1929. | | | | | | | | | |
| 18/1 | 352 | 6·8 | 13·6 | 7·6 | — | — | — | — | Readmitted. |
| 31/1 | 430 | 6·4 | 16 | 10·5 | — | — | — | — | P.p. 5·1. |
| 8/2 | 670 | 10·5 | 24·4 | 19·5 | (*a*) 9·3<br>(*c*) 0·281 | — | — | — | — |

U.-c.t. = Urea-concentration test.
P.p. = Plasma protein. P.c. = Plasma chlorides.

Mr. J. R. Rolston reported that the fundus generally was myopic in character; otherwise no pathological features were present.

*Course of illness.*—The patient remained in hospital from July, 8th, 1928, to Sept. 15th, 1928. After the first fortnight he appeared to be in very fair health; he was up most of the day helping in the work of the ward and was quite active and energetic. He was at once put on a diet containing as little protein as possible, and it will be seen in the Table, detailing the various clinical and biochemical findings that the blood-urea fell somewhat. The metallic taste in the mouth vanished. He passed three pints of urine daily containing 0·1 per cent. of albumin. The specific gravity was constant at 1010. The systolic blood pressure on discharge was 128 mm. Hg and the Wassermann reaction was negative.

Repeated blood counts gave about 3,200,000 red cells and 45 per cent. of hæmoglobin. Stained films showed no evidence of stippling of red cells. In view of the fact that he had worked for many years in a paint shop the urine was examined carefully for lead by Aub's micro-chemical method [1] in which lead is crystallised out as a hexanitrite of potassium lead and copper. This test was negative. Since Hunter and Aub [2] have shown that lead is rapidly eliminated after giving parathyroid, the above test was repeated after giving this gland, but the results were again negative. Andrews's diazo test [3] was strongly positive. The urea-concentration test on admission gave figures 1·2, 1·2, 1·3.

He remained at home until Jan. 15th, 1929, when he was readmitted to hospital. During this time, until just after Christmas, he was in very fair health, his appetite was good, and he used to take long walks every day, and talk about going back to work. He had been promised a light job and felt quite equal to doing this. He used to attend every fortnight for examination and blood was usually taken at these visits. His mother said that at Christmas time he had been up and about most of the day while shopping and apparently was not at all fatigued. Having attended on Jan. 15th, 1929, he complained of feeling rather tired and of having an unpleasant taste in the mouth. His blood-urea was found to be 352 mg. and he was forthwith readmitted. His condition on examination was similar to that already described on his first admission. His colour was good, he was well nourished, and he himself did not think that he was particularly ill. Blood pressure was 143/93, no œdema was present anywhere. He was able to get about, and helped in the ward work in the afternoons. On Jan. 31st he began to complain of severe headache and nausea, and also of the still present unpleasant taste in the mouth. Blood pressure 135/82. Blood-urea 430 mg. per cent. He felt depressed and was rather drowsy. No œdema was present.

On Feb. 5th he felt very ill and started vomiting everything he took. He had severe headache; the blood pressure was 133/75, and there was no œdema. On Feb. 6th he was drowsy and constantly vomiting. Blood pressure 130/75. On Feb. 8th he was very drowsy and had severe headache. The blood-urea was 670 mg. per cent. and the blood pressure 100/55. There was still no œdema. He died suddenly on Feb. 9th.

*Autopsy.*—With difficulty permission was obtained for a post-mortem examination limited to the removal of the kidneys.

The body was well nourished; no œdema was present anywhere. On incision of the abdominal wall, the subcutaneous fat was not diminished. No free fluid was present in the peritoneal cavity. The kidneys were small and several small cysts were scattered over the external surface. They were pale in colour. The capsule was adherent and on stripping it a raised rough papilliform surface was left. The right kidney weighed 60 g., the left 55 g. The cortex was 4·5 mm. in depth and well demarcated. The cut surface was a pinkish yellow colour and finely mottled. The medulla was paler and almost of a yellowish colour. The peripelvic fat was increased.

Microscopical examination of the kidneys showed them to be completely disorganised. Extremely few approximately normal glomeruli or tubules were present. Nearly all the glomeruli were completely fibrosed and embedded in fibrous tissue, and the substance of the kidney mainly consisted of fibrous tissue infiltrated uniformly with small round cells. Most of the few tubules present were filled with colloid material, the epithelium flattened or defective. All the smaller vessels showed marked thickening of the intima.

### *Discussion.*

Clinically the outstanding feature of this case is the very short and indefinite story of ill-health, at the most a vague feeling of malaise for three or four months, before on examination it was noted that his blood-urea was over 400 mg. per cent. And on examin-

ation, beyond a cloud of albumin in the urine, nothing abnormal whatever was found; the man was of a good colour in spite of the low red cells and hæmoglobin, and was well nourished and generally felt in very fair health. The blood pressure was very little raised. MacLean [4] has recently described cases of this nature.

Another curious feature of the case was the complete absence of œdema throughout the whole time he was under observation. As a result of a low protein intake the blood-urea fell considerably from 400 to 200 or just below and the patient was in very fair health and able to take long walks. It will be seen from the Table that the serum calcium did not fall very low, nor the plasma phosphates rise very high in relation to the very high urea figures; indeed, the calcium throughout was practically normal, in marked contrast to cases reported by de Wesselow [5] and Izod Bennett.[6] The peculiar metallic salty taste in the mouth described by Bennett was at times very troublesome to this patient but was only noted when the blood-urea was over about 300 mg. per cent. As happens so often in this type of case the symptoms of uræmia came on with great suddenness.

The case is interesting because it shows the great value of a thorough chemical examination in some cases of nephritis. It is, I think, certain that on a clinical examination alone in the early stages of the disease no one would have realised how hopeless the condition was. Further, I think no class of disease would repay better than nephritis a long-continued clinical study over many years, undertaken by practitioners who could observe and describe the whole course of the disease with the care that was so successfully employed by the late Sir James Mackenzie in diseases of the heart.

*References.*

1. Aub, J. C., Fairhall, L. T., Minot, A. S., Regnikoff, P.: Medicine, 1925, iv., 1.
2. Hunter, Donald, and Aub, J. C.: Quart. Jour. Med., 1926–1927, xxi., 123.
3. Andrews, C. H.: THE LANCET, 1924, i., 590.
4. MacLean, Hugh: Ibid., 1927, ii., 1257.
5. Wesselow, O. L. V. de: Quart. Jour. Med., 1922, xvi., 341; THE LANCET, 1923, ii., 163.
6. Bennett, T. Izod: THE LANCET, 1928, i., 535.

# Reviews and Notices of Books.

RECENT ADVANCES IN PSYCHIATRY.

By H. DEVINE, M.D., B.S., F.R.C.P. Lond., Medical Superintendent, Holloway Sanatorium, Virginia Water. London: J. and A. Churchill. 1929. Pp. 340. 12*s.* 6*d.*

THE central theme of this well-written book consists of an exposition of a particular philosophical conception of the nature of mental disorder. A number of the principal modern tendencies in psychiatric research are summarised, and their supposed implications ingeniously dovetailed into the philosophical scheme. The latter consists fundamentally in a conception of the organism as a whole, with an indissoluble relation to its environment. To contemplate the organism and its functions, apart from environment, is, according to Dr. Devine, a philosophical and methodological absurdity; functions have to be defined in terms of environmental stimuli and organic responses. This bipartite conception has no need for a dualism of body and mind. Mental disorders are really "organic" disorders, the result of more or less durable disharmonies between the organic cravings and the environmental conditions.

This particular application of the main conception colours completely the scientific outlook of the book. Following an introductory chapter on the fundamentals of psychiatry, in which the conception of mnemic causation is adopted, there is a discussion on toxic-infectious and similar factors in the causation of the psychoses. Much of the emphasis of this section is laid upon showing that a confusional syndrome can arise on a basis of physical or emotional perturbation alike. This is, of course, generally known; here it is made to contribute ingeniously to the main thesis—that there is an organic basis of all or most mental illness. But in his eagerness to make this point, the author is in danger of obscuring one of the cardinal rules of clinical psychiatry—namely, wherever confusion exists, to suspect the presence of a recognisably physical component in the ætiology. Confusion explicable in purely psychological terms seems hardly to be considered. The importance of the isolation of the confusional syndrome by Meynert is stressed; but the opportunity is lost of pointing a moral—much needed at the present day in psychiatric circles in this country—namely, the possibility of clear determination, by means of clinical mental characteristics alone, of a mental reaction found principally in association with discoverable organic disease. Wider recognition of the significance of this clinical type would prevent certain errors in therapeutic claims. This touches upon an important point in the author's conceptions. For him a psychosis is an "organic" disease; but the meaning of this statement to him is that a psychosis is "the interpretation in the psychic life of endogenous excitants or disturbances originating in the depths of the organic life." The fact that this is not the usual meaning of "organic" disease is nowhere made explicit. Yet surely organic disturbance of the kind may be "functional" nevertheless. It would seem helpful if instead of the distinction between "functional" and organic, the essential delimitation were between reversible and irreversible. Organic and structural are not synonymous; organic, in Dr. Devine's sense, may be "functional"; and functional may or may not be psychological.

The contributions to the psychopathology of the psychoses made by C. G. Jung, J. T. MacCurdy, and A. Storch are dismissed in less than a paragraph each. The stratification of the psyche itself is not mentioned, which may be partly the result of the omission of any detailed consideration of these writers; and it helps to explain the impression one obtains from the book of a psychiatrist standing helpless in face of the—to him—incomprehensible psychological farrago presented by his patients and their utterances. Sullivan's recent work on the mental experiences of schizophrenics is not mentioned at all. There is another curious omission—curious because it would perhaps have supported the author's thesis of an organic basis for the psychoses; the recent work on mescal in normals and in psychotics is not alluded to. A useful emphasis is laid on hereditary studies, while at the same time the author deprecates putting too much weight on the heredity of any particular case. Rudin, the principal present-day explorer in this field, does not receive the honourable mention which is his due; nor in a discussion on the inheritance of acquired characters do W. McDougall's experiments on white rats find a place, although if valid they are more precisely relevant than those discussed in the text. H. A. Cotton's work on focal infection in the psychoses is quoted largely, and cautiously approved in principle. The facts that no one else has ever approached the results claimed by Cotton, and that the latter has for some years substituted colonic wash-outs for catastrophic colectomies are not explicitly mentioned.

There is an attractive chapter on the effect of somatic disease in psychotic subjects; but we cannot help thinking that from the physiological point of view the French theory of colloidoclasia as applied to the psychoses, by which an emotional shock is supposed to sensitise the organism in a way strictly homologous with anaphylactic sensitisation, is as airy a speculation as any of which the lesser Freudians have ever been accused.

Part III., "the behaviour of the organism in mental disorders," is an interesting attempt to fit a number of discrete physiological observations into the author's general thesis; and the attempt furnishes a

useful object-lesson. It shows well how experimental results and data of laboratory observation—in this case those of F. Golla and his co-workers at the Maudsley Hospital—may be endowed with a significance of which the original observers did not dream, and which will probably surprise them. Moreover, A. A. Osman has recently described similar acid-base changes in the blood in a random group of debilitated children. The chapter on the basal metabolism in the psychoses is difficult to follow on account of the varying notation employed.

The ingenious elaboration of the conception of hysteria as a mythomania is attractive; but like so much of the French inspiration of this work, its attractiveness is seductive. It would be a pity if hysterics in general were regarded as "mythomanic"; there are a great many different types of personality in whom hysterical symptoms can appear; and simple generalising alignment (after Jung) of hysteria with "extroversion" will not do. The Freudians are repeatedly asked to supply statistical evidence of their views; but Kreschmer's type-characterology is less critically accepted. It would have been interesting to have had the personal observations of an experienced psychiatrist like Dr. Devine on the relationship of manic episodes, for example, to the "asthenic habitus." In the chapter on treatment no reference is made to Pearce Clark's claim to treat psychotic depressives successfully with a modified psychoanalytic technique; while Meyer's classical article on the treatment of paranoia and paranoid states is not mentioned. No reference is given to the recent increasing interest in children and in their "nervousness"; and the statement that the general intelligence is unaffected "after epidemic encephalitis" takes no notice of the best work so far done on this topic—namely, that of S. Dawson and Conn, who claimed that a fairly persistent retardation commonly occurs. Perhaps the least forgivable, because most fantastic, flight of Dr. Devine's physiological fancy occurs when he speaks of overstrain of the neurones leading to their degeneration and so to dementia, e.g., to dementia præcox; but so preoccupied is the author with the "organic" substance of everything mental that when towards the end he admits "pure psychogenesis"—sometimes—it is with an air of surprise. The book is preponderantly French in inspiration; references to German literature are disproportionately few.

We have considered it worth while criticising this book at length, partly because the series to which it belongs has had such deserved success, and partly because the present work is so well constructed, and welds into such a compact whole so many diverse facts. It is bound to have an effect in forming the opinion of the young psychiatrists in this country; but the emphasis on the organic basis (in Dr. Devine's special sense) of mental disorders leads to a comparative neglect of what most people regard as important recent contributions and therefore to a somewhat one-sided presentation of recent psychiatric work.

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THE PSYCHOLOGY OF PHILOSOPHERS.

By ALEXANDER HERZBERG. London: Kegan Paul, Trench, Trübner and Co., Ltd.; New York: Harcourt, Brace and Co. 1929. Pp. 228. 10*s.* 6*d.*

IN this, the latest addition to the International Library of Psychology, Philosophy, and Scientific Method, Dr. Alexander Herzberg does justice to his inclusive theme. Musing in his preface on how a particular neurosis comes to be developed with its associated symptoms, he inquires what kind of person it is that develops a neurosis, and what kind it is that does not; and then, by analogy, he asks how any individual arrives at a particular theory of life, and what the make-up must be in order to work out any theory at all, seeing that the majority of the world undergo no such process. The purpose of the book is to answer the last of these questions—namely, what sort of man formulates a constructive outlook upon life for himself; and he enumerates the factors which he holds must be present to the subject's mind in order that he may become a constructive thinker.

Discussing what constitutes philosophy, he compares the modern and the ancient position, when philosophy was an undifferentiated whole, comprising religion, poetry, and science. To-day, under the pressure of practical requirements, we perceive independent divisions of thought — mathematics, astronomy, physics, chemistry, and biology, for example, all yielding to this process of differentiation, leaving psychology, logic, and ethics to comprise philosophy. Dr. Herzberg makes it clear that he does not consider this whittling process to be justified, and he doubts if it has occurred, putting forward here a definition that philosophy is the science of the widest problems in all fields, and of those problems which affect mankind most closely. Following a justification of the argument that philosophy should be regarded as a homogeneous science, he inquires into the nature and objects of philosophic interest and the characteristics of philosophic thought, and then in a series of essays discusses the professional lives of some of the best known philosophers—Socrates, Plato, Aristotle, Epicurus, St. Augustine, Bacon, Hobbes, Descartes, Locke, Leibniz, Berkeley, and a score of more modern exponents. He finds that 27 out of 30 of the great philosophers display in the matter of choosing a profession conspicuous divergencies from the normal, and, curiously enough, many of them have shown either hesitation in embarking upon any career at all, or inefficiency when they have embarked upon it—or both. Many seem to have had no business-like sense of the value of money, many showed conspicuous peculiarities in relation to love, marriage, social intercourse, active politics, or the whole practical side of life, but all of them have been men of great intensity of impulse, and more than normally intense inhibitions.

The biological value of philosophy the author finds is threefold, serving as a substitute for practical action in the discharge of excess impulse energies, creating in the place of harsh and intractable and therefore unsatisfying reality, a painless and tractable world, and leading by means of a detour, to the real satisfaction of powerful interests.

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PROCTOLOGY.

By FRANK C. YEOMANS, A.B., M.D., F.A.C.S., Professor of Proctology, New York Polyclinic Medical School. London and New York: D. Appleton and Co. 1929. Pp. 661. 45*s.*

THIS text-book is a magnificent production which will take its place as one of the leading books in the English language on diseases of the rectum and pelvic colon. The author clearly writes with a vast personal knowledge of the subject and of its literature. Old and well-proved methods are given their due position, and at the same time the newer methods are described in detail, with the author's opinion of their value. Of some of recent and much-vaunted remedies he speaks with caution and scepticism. E. P. Clemons's method of treating rectal strictures with $CO_2$ snow is described, and J. A. Bargen's researches on the diplococcus which he has found in ulcerative colitis; Dr. Yeomans modestly notes his own recent work on the treatment of pruritis ani by the subcutaneous injection of benacol—a new anæsthetic solution in oil. The chapter on diverticulitis is an excellent summary of what is at present known of this interesting condition; attention is drawn to the dangers of infection following resection and end-to-end anastomosis; Dr. Yeomans considers that if resection is possible it should be done in stages by the Mikulicz method. In discussing the question of excision of the rectum for cancer, the author points out that the surgeon must be familiar with the different methods available and must fit the operation to the individual case; an interesting table is given of results of excision of the rectum according to different

authorities. A general discussion of the indications and results of radium therapy for carcinoma of the rectum is given, and some description of treatment by radon seeds and radium packs. The modern technique of the "surgery of access" and radium-needle barrage as described by Neumann and Coryn is not mentioned.

In this excellent treatise the subject matter is clear, accurate, and sensible; the references at the end of each chapter are complete and up to date; the print is clear and the illustrations are numerous and excellent. In fact, the book is one which every surgeon and practitioner interested in proctology will read for pleasure and study with profit.

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THE FACTS OF MODERN MEDICINE.

By FRANCIS W. PALFREY, M.D., Instructor in Medicine and in Hygiene, Harvard University. London and New York: D. Appleton and Co. 1929. Pp. 490. 21*s*.

Dr. Palfrey has written a useful book. He defines his own work as a simplified statement of established knowledge on medical subjects, which implies the clearing up of certain current misconceptions: the purpose is to place the basic facts of medical knowledge before the educated public that their comprehension may lead to a better mutual understanding between such a public and the medical profession. So we have here an intention to supply a scientific, though popular, book to take the place of those terrible "family medical advisers" published in response to the desire of patients to treat themselves without consulting the doctor. Aware of the criticism to which the book will be subjected—criticism which invariably takes the form of quoting Pope—on the ground that the attempt to be scientific must fail where an unequipped audience is addressed, Dr. Palfrey replies that the growing recognition of the fact that the public should have more opportunity of learning the truths of medicine justifies his work, and we think that he is right. For, as the author says, "the dangers of popular attention to medical subjects do not lie in an understanding of facts by those capable of assimilating them: they lie rather in erroneous impressions derived from partial or imperfect understanding of facts." With a view to an explanation of these facts we have some 200 pages forming a summary of the fundamental sciences, and 250 pages containing a categoric though necessarily brief description of various diseases. The first part of the work is decidedly well done. The notes on elementary biology are clear; the essentials of anatomy and physiology are given carefully; and in a sense the instruction is simple, but whether it will be simple for those who have not already mastered the sciences in a more detailed manner we considerably doubt. Concerning the second part of the book, which is the reason for its writing, it depends entirely upon the way that the information is used whether it proves of value or no to the lay reader. He who thinks that perusal of these able summaries will free him of worry, rooted in imperfect knowledge, will be disappointed, unless he obtains a perilous amount of self-confidence; but he who reads with the desire to ascertain medical views along a particular line, as they are expressed, will be a far more alert disciple of the truth.

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THE SCHICK TEST.

*A Practical Guide to the Schick Test and Diphtheria and Scarlet Fever Immunisation.* By GUY BOUSFIELD, M.B., B.S. Lond., Medical Officer, Diphtheria Immunisation Clinics of Camberwell and Lambeth; Bacteriologist, Camberwell and Hackney. London: J. and A. Churchill. 1929. Pp. 72. 5*s*.

THIS small book, written for those beginning or already engaged in active immunisation against diphtheria and scarlet fever, covers the ground fairly well, though references to the copious literature are rather scanty. Most of the text relates to diphtheria and to English practice. After a short discussion of the fallacies of swab diagnosis, the technique of the Schick test, and the way to read results, active immunisation and the various problems arising at the initiation of a clinic are described. In the control of epidemics Dr. Bousfield suggests that the main reliance should be placed upon Schick testing, with swabbing as a necessary adjunct. In his hands double immunisation against diphtheria and scarlet fever has not been satisfactory. He does not discuss fully the difficulty of a decision when an indefinite small reaction appears in retesting after immunisation. The five-minute interval recommended between desensitising doses of serum is too short, for a reaction after a small test dose in a sensitive patient may not appear for an hour. The illustration of a "positive and pseudo" reaction is not very clear.

The book contains some useful hints on minor points; the discarding of a white overall and a timely gift of sweets may often avert unwelcome tears at an inoculation clinic. Most of the information required by the novice as well as the more experienced worker is supplied in handy form, and public health administrators and many practitioners will be well advised to place this book on their shelves.

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LIGHT AND HEAT IN THERAPY.

With a Chapter on Foam Treatment. London: The Actinic Press. 1929. Pp. 174. 6*s*. 6*d*.

THE Proceedings of the Second International Conference on Heat and Light in Medicine and Surgery, held in London in October–November, 1928, have been published in book form. It contains contributions on heat and light treatment in nervous affections, gynæcology, surgical and pulmonary tuberculosis, and in diseases of the ear, nose, and throat, as well as on technique and apparatus, and a brief report of the discussion which took place on each subject.

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THE KAHN TEST.

A Practical Guide. By R. L. KAHN, M.S., Sc.D. London: Baillière, Tindall and Cox. 1928. Pp. 201. 18*s*.

THE considered opinion of the League of Nations Serological Congress at Copenhagen (1928) served to confirm the generally accepted view that the Kahn test for the sero-diagnosis of syphilis is the most reliable of the numerous precipitation reactions. Prof. Kahn's latest book is an elaboration of the section on Procedure of his "Serum Diagnosis of Syphilis by Precipitation," published in 1925, and is designed to be a companion to two other volumes as yet unpublished. One half of the book is devoted to the standardisation of every aspect of the three variables used in the test, with the object of producing optimum sensitivity and eliminating false positives, whilst the technical description of methods is elaborated with a valuable discussion on the rationale and theory of precipitation reactions. The procedure of the test proper, both quantitative and qualitative, with blood-serum and cerebro-spinal fluid includes also recommendations for glassware and apparatus and a description of a micro-technique. Medical men as a whole will welcome any sero-diagnostic test for syphilis which can be rendered sensitive enough to detect latent disease during the course of treatment; in this respect, the especially sensitive antigen of Kahn for use in the "presumptive procedure" for treated cases of syphilis indicates an advance not yet achieved in the technique of the Wassermann reaction.

The book, which has a good bibliography, is essential to any worker performing the test, and is of value to those interested in the practice and theory of precipitation reactions.

## A History of Pathology.

By E. R. Long, Professor of Pathology, University of Chicago. London: Baillière, Tindall and Cox. 1928. Pp. 291. With 45 plates. 22*s.* 6*d.*

Prof. Long has attempted what no one has done before, and he has succeeded quite well. Pathology is slowly settling down to be itself, and, if it has not yet quite made up its mind what it is after, it has achieved a special place in the academic world, a literature and a priesthood. The present is the fulfilment of the past and the promise of the future, and pathologists might well spend a little time reflecting where they are and how they got there, in the light of what Prof. Long has to tell them. Rather too large a proportion of the book is given to the ancients; the tale hardly becomes of much moment before the nineteenth century.

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## Jahresbericht Radiologie.

Compiled by K. Frik. Vol. I. Berlin: Julius Springer. 1929. Pp. 388. R.M.38·80.

This is a most complete bibliography of recent radiological literature, exceedingly well classified as regards subject matter, and with adequate cross references. That the volume contains approximately 7000 references is some index to the extent of the work that is being done in radiology as applied to medicine. This painstaking compilation appears to be exhaustive and accurate; we note, however, that a defect is the omission in most instances of the year of publication, although the volume and page are given. We trust that in future editions the author will include this information, which shows at a glance which communications are likely to be useful for any special purpose and which are likely to be out of date.

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## Sexual Life of Savages in North-Western Melanesia.

By Bronislaw Malinowski, Ph.D., D.Sc., Professor of Anthropology in the University of London. With a Preface by Havelock Ellis. London: George Routledge and Sons. 1929. Pp. 506. 42*s.*

Dr. Malinowski's ethnological work is already well known, and in this book, which deals in detail with the natives of one small island group, he describes his methods and makes clear the mental attitude necessary to success in understanding savage customs. It is assumed that his readers accept the standpoint that an account of sexual life must be as free from limitations as the account of any other human activity. Setting aside any preference he may have for our own customs and taboos, he is able to enter into personal friendships with his subjects; thus he has obtained spontaneous confidences and intimate gossip, in contrast to what he describes as "the mechanical pumping of informants by the question and answer method at so many sticks of tobacco an hour." Without drawing any moral, he shows a close parallel between the mental processes of the Trobriand Islanders and our own. Their social rules are different from ours, but not their reactions to them. They show the same reticences that we do, the same lifting or intensification of conversational taboos to correspond with the social occasion, and they present to the outsider a rigid code the frequent violations of which are revealed only through intimate personal acquaintance. Spencer and Gillen have described Central Australian tribes whose members believed that sexual intercourse had no relation to conception, and the writer, finding the same belief among the Trobrianders, was unable to convince them of the physiological facts of paternity even in regard to the breeding of goats and pigs. Descent is of course matrilineal, but government is in the hands of chiefs whose influence is economic and dependent upon polygamy. Dr. Malinowski thinks that efforts to abolish that custom will lead to social disorganisation and the gradual extinction of the race. Another practice placed under a ban by reformers from without is that of sexual freedom among the young, which by a process of trial and error leads to marriages not lacking in loyalty or affection and generally permanent. Love-magic and sorcery play their part in courtship, but seem to serve the purpose of allowing personal inclinations to disguise themselves as the product of irresistible external forces.

The subject of the book involves the whole social organisation of the community, of which the author gives a vivid picture, that is made more life-like by the many excellent full-page plates. His theoretical discussions are marked by a dislike for speculating as to past evolution or cultural history; he regards customs as fitting into the actual social scheme and finds in their fitness sufficient reason for their existence. He has so come to appreciate the native's cultural qualities that he sees in them no more food for speculation about origins than we may observe in our own. This may disappoint theorists, but in no way lessens the value of a most interesting book.

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## Percussion of the Chest.

By J. B. McDougall, M.D. Glasg., F.R.C.P. Edin., Medical Director British Legion Village, Preston Hall, Aylesford, Kent. London: H. K. Lewis and Co., Ltd. 1929. Pp. 143. 6*s.*

This little book will be read with pleasure by those interested in percussion and the production and variation of sound. After a brief historical sketch and a short chapter on the technique of thoracic percussion, a long chapter is devoted to the acoustic aspect. The author divides the sounds elicited by percussion into two groups, the musical and non-musical, and a full description is given of the various notes which may be obtained. The final chapter describes the variations in the percussion note in certain diseases of the chest and contains an interesting description of the reflex bands of dullness which have been described in cases of pulmonary tuberculosis. A useful bibliography is appended.

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## JOURNALS.

Revue Belge des Sciences Médicales.[1]—The first number of this new journal, which promises to be a valuable addition to medical literature, came out in January under the guidance of a distinguished editorial board, including clinicians, pharmacologists, and pathologists. Appearing in ten numbers per annum it is intended for the publication both of original papers and of reviews on special subjects, together with abstracts of papers of the Belgian medical literature and a critical bibliography. The contents of the February number may be briefly summarised as an indication of the scope of the journal. It contains a paper by Dr. von Goidsenhoven on the treatment of essential thrombopenia by ligature of the splenic artery to which more detailed reference was made on p. 1159 of our last issue. This is followed by an "annual review" by Dr. A. Dupont, entitled Dermatologie et Syphiligraphie, which is confined to a summary of papers published during 1928, so that the reader is kept abreast of the most recent international literature. The review of the Belgian medical literature is in this number represented by abstracts of papers dealing with pharmacological subjects. The number closes with signed reviews of recent books.

[1] London: H. K. Lewis and Co., Ltd. 20*s.* per annum.

# THE LANCET.

*LONDON: SATURDAY, JUNE 8, 1929.*


## EARLY MORTALITY FROM TUBERCLE.

ONE of the least profitable duties of a tuberculosis officer is that which concerns the examination of "contacts." The most readily accessible contact is the school child, whose mother is seldom averse from one of those "proper examinations" which have almost usurped the place of a bottle of medicine in the public esteem. The candidate himself is seldom unwilling to forgo the tedium of an afternoon's schooling for the sake of a medical adventure which is reputed to be painless, and may be rewarded with a pot of malted oil. The average mother may, therefore, be relied upon to bring to the dispensary all the children of school age she possesses. Infants inevitably accompany their only nurse, and what has been termed the "procession of contacts," duly takes place. The result is highly gratifying to all concerned, for unless the tuberculosis officer's imagination has been captivated by the possibilities of paravertebral percussion, he is able to report that the "contacts" are not suffering from tuberculosis. Children suffering from lupus, Pott's disease, or even cervical adenitis do not appear in the queue, for the least observant mother will already have sought treatment for the obvious manifestations of non-pulmonary tuberculosis. As a social investigation, as an opportunity for giving a little elementary instruction in the laws of hygiene the expedition may have been justified. From any other point of view the examination of contacts as usually conducted is futile, for, speaking generally, children of school age do not suffer from pulmonary tuberculosis. At the more scientific centres the examination may include the use of X rays and graduated skin tests. The application of these methods may, indeed, enable the tuberculosis officer to determine whether a child has been subjected to a "primary infection" with tubercle. But as evidence of this will only be obtained when a degree of immunity has been established it is doubtful if the finding has much practical value. The so-called "tuberculous seedling" is not the precursor of the consumptive adolescent who from diffidence or pressure of business is usually reluctant to attend the dispensary as a contact.

Very different in value is an investigation of the kind recently undertaken by the Lancashire group of tuberculosis officers, the result of which is given in a valuable report edited by Dr. LISSANT COX.[1] The object of the investigation was to determine the fate of young children living in tuberculous households. For this purpose the histories of nearly fifteen hundred children under five years of age, living in homes in which one or more adults suffering from tuberculosis resided, were compared with those of children of the same age and living under comparable conditions, but not subjected to the risk of tuberculous infection. The most significant finding was that the death-rate from non-pulmonary tuberculosis among the children exposed to the risk of infection by a sufferer from "open" tuberculosis was greatly in excess of the rate occurring among the controls. The death-rate among the contacts in the first twelve months of life was nine times greater than that of the controls, fourteen times greater in the second year, and nineteen times greater in the next three years. Two-thirds of this mortality was due to tuberculous meningitis. The importance of intimacy of contact as a factor in the transmission of the disease is shown by a mortality-rate significantly greater among the children whose mothers were tuberculous than among those exposed to infection from tuberculous fathers. It is interesting to note that the death-rate from *all causes* in the first year of life was less among the contacts than among the controls. Dr. COX suggests that this may be due to the supervision of tuberculous households by the medical and nursing staffs of local authorities. It is relevant to note that the reduction of mortality attributed to the use of BCG vaccine in France extends to causes of death other than tuberculosis.

Prof. A. CALMETTE has calculated that in France 24 per cent. of the children of tuberculous mothers died from tuberculosis in the first year of life. The corresponding figure for Lancashire children was estimated as 3·2 per cent. The Lancashire death-rate for "contact" infants is, in fact, less than that claimed for French infants protected by BCG vaccine. But though the death-rate from tuberculosis in infants in Lancashire compares very favourably with that recorded elsewhere, the fact remains that a needless sacrifice of child life continues. The experience of Papworth has shown that it is possible for the child population of a fair-sized village to live in more or less constant contact with parents suffering from open tuberculosis and yet to remain free from any manifestations of disease. Where social conditions are satisfactory and where there is a scrupulous observance of the laws of hygiene the child of tuberculous parents is in no danger. But conditions at Papworth are admittedly exceptional. Might not more be done to lessen the risk of infection in areas where home conditions are far from ideal? The simplest solution of the difficulty would be either to remove the source of infection from the home by arranging for the permanent segregation of the tuberculous, or to provide an alternative home for the contacts. The latter system appears to have worked well in France, but it has the grave disadvantage that the children of a tuberculous father are deprived of both their parents. Even where legislation permits of compulsory segregation of an infectious patient experience proves that it is seldom enforced. The number of hospital beds available for the treatment of advanced pulmonary tuberculosis is notoriously inadequate. Reluctance to enter a poor-law institution prevents many patients from accepting relief of this kind from the guardians, even in those areas where harmonious relations exist between the poor-law and the public health authority. The provisions of the Local Government Act, if applied with humanity and intelligence, should remove many of the present difficulties and should enable the medical officer of health to use his powers of compulsion for the protection of threatened child life without violence to his charitable instincts.

[1] The Fate of Young Children in Tuberculous Households. Report of the Lancashire Group of Tuberculosis Officers to the Research Committee of the Joint Tuberculosis Council, 1929. London: C. Tinling and Co., Ltd.

## OCULAR IMBALANCE.

THE equilibrium of the extra-ocular muscles of the two eyes is a subject which it is necessary for all those engaged in the prescription of spectacles thoroughly to understand, and the recent discussion on the subject at the congress of the Ophthalmological Society, reported in our issue of April 20th, will, it is hoped, do something to further this understanding. The first essential is familiarity with the anatomy of the extra-ocular muscles and their actions on the axis of each eye separately, especially of the four muscles whose combined actions move the eye in the vertical meridian. The second essential is to understand the difference between concomitant defects in the movements of the two eyes dependent on peculiarities of innervation of the centres for convergence, divergence, &c., and paretic defects dependent on weakness of particular muscles. When a defect due to either of these causes is so great as to cause an obvious squint the patient does not attempt to overcome it, but either sees double or suppresses the image in the squinting eye. When, however, the defect is so slight that the patient is able to overcome it by an effort of attention, either it may cause no symptoms at all or the effort may be attended by such a nervous strain that it may be accompanied by various uncomfortable nervous symptoms, often including headache which, according to Dr. E. E. MADDOX, is generally of the occipital variety. These cases in which there is want of balance between the corresponding muscles of the two eyes, not great enough to cause a squint, are termed heterophoria, and according to the direction in which the movement of one or the other eye is defective there are a number of varieties of this condition which have received special designations, such as eso-, exo-, hyper-, and cyclophoria. There is a further distinction between the paretic cases, in which the defect varies in degree according to the direction in which the eyes are placed when the test is made, and concomitant cases in which the defect is equal in degree in whatever position the eyes are tested. Dr. MADDOX, whose rod-test is familiar to all ophthalmic surgeons, distinguishes as many as 24 varieties, 12 paretic and 12 concomitant. It is consoling, however, to know that comparatively few cases of heterophoria require any treatment, when they are found in people leading an ordinary life. In airmen, however, the case is different. As a rule, the call on the reserve power of the eye-muscles to correct any slight defect of horizontal movements or of convergence involves no undue strain on the nervous system of those engaged in the ordinary pursuits of life. But when the nervous tension is at a very high pitch, as in a forced landing from an aeroplane, any extra call on the nervous system necessary to correct a faulty balance of the eye-muscles may prove to be the needle which breaks the camel's back. Group-Captain E. C. CLEMENTS, who took part in the discussion, has done yeoman service in bringing this aspect of the matter to the notice of the authorities of the Royal Air Force, and instituting not only tests for the condition but ocular exercises designed to cure it. For the ordinary civil population, however, there is a general agreement that the only variety of heterophoria that commonly needs treatment is hyperphoria. The reserve power of the vertically acting muscles when they are called upon to adjust a difference in height between the two eyes is comparatively slight. In these cases symptoms, and even occasional diplopia, are not infrequently found, and can be counteracted by the prescription of appropriate vertically-acting prisms. In extreme cases operation by advancement may be called for. The prescriber of prisms is faced at the outset by the complication that there are at least four different systems of nomenclature of prisms commonly used. Fortunately in the case of three of them the differences in deviating power for corresponding numbers is negligible for prisms of low power such as are generally used. In the case of the fourth system (angle of deviation) the number of the prism represents just about double the deviating power of that of the corresponding number of the other systems. The wholesale prescribing of prisms is indefensible; the one condition other than hyperphoria in which the prism may serve a useful purpose is that of weakness of convergence. In young people the range of convergence often varies with the state of health, and the proper treatment for weak convergence is often tonic, assisted by exercises rather than the prescription of prisms. In old and debilitated people, however, the condition may be more or less permanent, and much benefit may accrue from the wearing of low prisms, base in, for reading. If it be asked how can a low prism of one or two degrees have an appreciable effect in dealing with deviations many times that amount, the answer was supplied by Dr. MADDOX when he pointed out that it was the last degree of stretch of the fusion reflex which was most fatiguing. In esophoria prisms are seldom called for; in the case of hypermetropes it is better to order a fully correcting spherical glass, so as to cancel the reinforcement of the tendency to converge which accommodation for a near point naturally brings with it. Similarly with presbyopes who show exophoria it is better to order them weaker spherical lenses than would be given if they were orthophoric.

## MASTURBATION AND THE CHILD.

ANY youth walking in a London street some thirty years ago ran the risk of having thrust into his hand a pamphlet describing the terrible results of "solitary vice" and urging him to seek treatment from some pernicious quack. Police action has checked this indecency, but it occasionally reappears as an advertisement in some shady periodical where allusion to "lost manhood" is calculated to stir up those dreads that plague many physically healthy people who have at some time or other passed through a phase of masturbatory practice. Such an appeal to fear succeeds because there exists a widespread belief in disastrous results from masturbation, for which, however, modern medical literature offers no evidence. This frame of mind appears to be a survival from the eighteenth century, when TISSOT, a physician of Basle and Fellow of the Royal Society of London, wrote a treatise upon Onanism which enjoyed a European reputation and appeared in several languages, an English translation having been published in 1766. Masturbation he describes as a corruption more baneful perhaps than small-pox, and he tells the reader in a preface that "where the writer must have less grounds to expect he shall convince by reasoning, than he has to hope he shall terrify by examples, too many cannot be recited." This lurid promise is well kept, and after some of his gruesome descriptions the impression upon his victim would certainly be, as the author hoped, "a dreadful portrait sufficient to make him retreat with horror."

VOLTAIRE further popularised this method of approach; in 1836 LALLEMAND wrote a book in which masturbation was made the source of all evils, and

the bogy flourished through the nineteenth century. HAVELOCK ELLIS, in the first volume of his "Studies in the Psychology of Sex," cites 29 authorities, including GOWERS, who between them furnish a wonderful list of the signs and consequences of masturbation, ranging from insanity to warts on the hands, a list which should emphasise the advantage medicine now derives from the use of statistical methods and control groups. Even without these checks upon fantasy the influence of TISSOT has greatly weakened, inasmuch as the subject is now rarely mentioned in text-books except to note the necessity of removing the torturing fears and remorse so frequently associated with masturbation, whether past or present, for the effect of the superstition upon the nervous and sensitive of either sex, both in childhood and adult life, is still familiar to those practitioners who deal with nervous people and have the courage to face the matter frankly. It is therefore with regret that we notice the circulation of a set of booklets, issued by an imposing authority and lately recommended in a letter to the *Times* as guides for giving sex instruction to boys, in which the terrifying method is perpetuated. The boy of 14 is to be told that because of the connexion of the private parts of the body with the spine and brain "it follows that, if you meddle improperly with these parts, your brain will suffer"; he is also to be warned that "many lives have been cut short by disease brought on by giving way to this bad habit in boyhood."

To place this literature, under the guise of sex instruction, in the hands of boys or parents can do only harm, especially when we recognise that a masturbatory phase occurs commonly in the development of boys and girls—though the terrorists fortunately exclude girls from their scheme of activity. The late Dr. CLEMENT DUKES estimated that masturbation occurred in about 90 to 95 per cent. of all boys at boarding school, and although he traced it entirely to the example of the already initiated yet we know now that it quite commonly arises spontaneously and remains a solitary practice. It has not yet been shown to be a primary cause of trouble, though even without specific external influence it often attracts to itself the sense of dread and shame with which the subject of sex is often invested in the mind of the badly instructed child; but the withdrawal of a child from wholesome interests into a world of solitary indulgence must be regarded as a signal of nervous or temperamental difficulties. It is these difficulties that call for treatment, and any emotion about masturbation should be checked by the investigator asking himself what is the object of treatment in any particular case. When that question is fairly answered we may hope to help the child without adding to his difficulties or sowing the seed of later troubles.

## THE MEDICAL GROUP IN PARLIAMENT.

MEDICINE has increased its representation and the new House of Commons, when it assembles on June 25th, will include 18 members of our profession. Their number is some 50 per cent. greater than ever before, and although we have never said a good word for vocational representation in Parliament, we heartily rejoice that there will be so many able to place medical knowledge and experience at the service of the two Houses. The Commons are increasingly occupied with large measures of social reform which have a medical side, and whatever Government may be directing the destinies of the nation, the closer application of hygiene to industrial life can hardly be long delayed. For the first time in our Parliamentary history a medical woman will sit in the House, and in Dr. ETHEL BENTHAM we have one who associated herself with the care of infant life and child-bearing long before they became the concern of all thoughtful people. Dr. STELLA CHURCHILL, another protagonist of child welfare, who was unsuccessful at the poll, nevertheless made a good show with nearly 11,000 votes to her credit.

A complete list of medical candidates, successful and unsuccessful, with the voting figures, is given on p. 1210, from which it may be seen that the proportion attached respectively to the Conservative, Liberal, and Labour organisations matches closely the political complexion of the new House as a whole. As an illustration of how little anyone can be regarded as a candidate for medicine, we need only recall that in two constituencies medical men opposed each other, to their own discomfiture. In one case this has resulted in the exclusion of Sir THOMAS WATTS, whose unconventional views on many matters, especially health insurance, enlivened the House. Two other medical members who were sitting at the dissolution have failed to re-establish their seats, and will be keenly missed. Sir RICHARD LUCE'S occasional contributions to debate were always marked by reasonableness and by intimate knowledge of his subject, and medical men in the Services found a good friend in him. The loss of Sir HENRY JACKSON is palpable, and we hope that he will be given the opportunity of entering the House in some other way. Of the new medical Members several, including Dr. FORGAN, Dr. MORGAN, and Dr. SPERO, have already fought at previous elections. Mr. SOMERVILLE HASTINGS resumes the seat which he occupied in the 1923-24 Parliament, and Mr. CHRISTOPHER ADDISON returns to the arena where he formerly occupied a prominent position. Among the 20 unsuccessful candidates, we may specially regret the failure of Dr. LYSTER at Winchester in his attempt to gain a seat as an active member of the public health service.

While the party element must, as we have seen, have played a large part in the election of these 18 Members, they will now take their places as units of a Parliamentary Medical Committee which is quite outside party and considers with a single eye the broad interests of medicine. On this Committee they will no doubt be joined, as heretofore, by certain coöpted University representatives as well as by the two medical peers, Lord DAWSON and Lord MOYNIHAN. The Chairman of this Committee, Dr. FREMANTLE, has on public health questions an authority which has been enhanced by his recently published books, and Dr. DRUMMOND SHIELS, whose Parliamentary and professional life cover almost the same period of time, will, it may be presumed, continue to be the active and efficient honorary secretary of this group. In practice a common finding has been secured on most important medical questions of the day, and if there should be some divergence of view on the function of the State in regard to hospitals and the provision of health services, it is well that there should be within the precincts of the House of Commons a medical forum for their quiet discussion and for the discovery of a common policy.

PORTSMOUTH EYE AND EAR HOSPITAL.—It was stated at the annual meeting of the Portsmouth and Southern Counties Eye and Ear Hospital that the work was hampered for lack of space; last year there were 24,500 out-patient attendances. It is the only specialised hospital in Hampshire.

# Annotations.

"Ne quid nimis."

## THE KING'S HEALTH.

On the eve of public thanksgiving for his complete recovery to health the King's convalescence has had a setback. Early last week he was confined to his room with a feverish attack, the announcement of which, with characteristic considerateness, was kept back until the general election had taken place. On Saturday it was added that an abscess had formed under the site of the old scar on the right side of the chest, and was then draining. After the week-end a bulletin signed by Sir Stanley Hewett and Lord Dawson, as well as by Mr. Henry Martyn, Surgeon-Apothecary to the King's Household at Windsor, contained the news that healing of the abscess was following a normal course, which in the nature of things must be tedious. This announcement and the fact that no necessity has been seen for the issue of daily bulletins have had the effect of restoring confidence, which was inevitably shaken by the association of a feverish attack with a fresh effusion. The trouble is clearly a local one and although confined to bed, His Majesty is able to transact public business and we may look forward with confidence to complete closure of the wound. There is happily nothing in the occurrence to dim the achievement of those who have borne the responsibility of the King's treatment during his illness, and whose names are fittingly mentioned in the list of Birthday Honours which follows.

## BIRTHDAY HONOURS.

In the official list of honours conferred by the King on the occasion of his sixty-fourth birthday the medical recipients include those who were His Majesty's advisers during his recent serious illness. In this important connexion Lord Dawson of Penn is created a Privy Councillor, baronetcies are conferred upon Sir E. Farquhar Buzzard and Sir Hugh Rigby, while Dr. Stanton Woods is knighted. Further, Sir Humphry Rolleston has been created G.C.V.O., Sir Frederick Stanley Hewett K.C.B., Dr. F. E. Shipway K.C.V.O., Dr. F. D. Howitt and Dr. L. E. H. Whitby C.V.O., and Dr. E. C. Dodds M.V.O.

The general list of members of the medical profession, including the one or two who are closely associated with it, who have received honourable recognition of their work, includes Dr. Grafton Page, Treasurer of the Commonwealth of Australia, who has been created a Privy Councillor. In the Orders of Chivalry the O.M. has been conferred upon Dr. Robert Bridges, Poet Laureate; in the Order of the Bath, Dr. M. A. Cassidy, chief medical officer of the Metropolitan Police, receives the civil C.B. (the occasion being the centenary of the Force) and Rear-Admiral H. C. Whiteside and Maj.-Gen. H. P. W. Barrow, Director of Hygiene at the War Office, receive the Military C.B.; the C.M.G. has been awarded to Dr. W. J. D. Innes, Director of the Medical and Sanitary Services of the Gold Coast, and to Mr. O. F. H. Atkey, F.R.C.S, Director of the Sudan Medical Service; in the Order of the Indian Empire Maj.-Gen. R. W. Anthony, Surgeon-General with the Government of Bombay, and Mr. Charles Albert Bentley, Director of Public Health in Bengal, have received the C.I.E., and in the Royal Victorian Order, in addition to those already mentioned, Lt.-Col. Gordon Carter has been created a K.C.V.O. In the Order of the British Empire, Maj.-Gen. T. H. Symons, the Director-General of the Indian Medical Service, and Dr R. H. Stawell, President of the Melbourne Hospital, have been created K.B.E. The following have received the C.B.E.: D.M. Macrae, P.M.O., Bechuanaland Protectorate, Col. A. H Safford, late R.A.M.C., Assistant Director of Medical Services, Baluchistan District, Dr. A. Sandison, P.M.O., Ministry of Pensions, and Lt.-Col. J. W. Watson, I.M.S., Civil Surgeon, Ajmer and Chief M.O. Rajputana and Ajmer-Merwara; the following have received the O.B.E.—namely, Maj. D. G. Cheyne, R.A.M.C., Deputy Assistant of Hygiene in the China Command, Maj. Jamshedji Nusserwanji Duggan, I.M.S., Professor of Ophthalmic Medicine and Surgery, Grant Medical College, Bombay, Capt. P. F. A. Grant, I.M.S., Squadron Leader (Hon. Wing Commander) E. Huntley, R.A.F., Mr. P. F. Mathias, Superintendent of the Government Royapuram Medical School, Maj. J. C. Pyper, I.M.S., late M.O. Equitation School, Saugor, India, Dr. I. D. Ramsay, Civil Surgeon, Ministry of Interior, Iraq, Surg.-Commander F. L. Smith, R.N., Mr. George Stuart, Assistant Director of Laboratories, Department of Health, Palestine, and Capt. S. H. Woods of the Army Dental Corps; while the following have received the M.B.E.: Dr. T. Fawsitt (for Public and charitable services in Oldham), Mr. W. P. S. Mitchell, M.O. of the Bastár State, Central Provinces, Dr. Socrates Noronha, M.O. in charge of the Anti-venereal Department in the Bombay Municipality, Dr. C. B. Philip, M.O., Kenya, and Mr. J. H. Theodore of the Indian Medical Department, King Institute, Guindy, Madras. Dr. P. Chalmers Mitchell, the secretary of the Zoological Society, and long associated with medical education as a biologist, and Professor Colin MacKenzie, Director of the National Museum of Australian Zoology, have been knighted.

To all these we offer our sincere congratulations, while we note the progressive wiping-out of the old reproach that in these awards workers in distant parts of the Empire fall to be forgotten.

## A NEW ZEALAND RADIUM CENTRE.

The annual report of the Radium and Deep Therapy Department of the Christchurch Hospital, New Zealand, which has just reached us, is the fourth from the pen of Dr. P. Clennell Fenwick, and is commended by Dr. Walter Fox, the medical superintendent, as evidence of progress abreast of that to be observed in other radium departments. Only in our issue of May 25th we published some interesting observations from this department on malignancy following trauma. With the exception of the treatment of menorrhagia, where there is a concise description of the method employed and a detailed account of the results, not only with regard to the main symptom of hæmorrhage, but also as to the occurrence of menopausal symptoms, it is not altogether easy to obtain information from the report itself as to the exact technique in use at Christchurch. A total of 508 milligrammes of radium element seems to be distributed amongst seven small plaques and 81 tubes or needles, none of which exceeds 25 mm. in gross length, with an active length of, say, 15–20 mm. As, however, in treating epitheliomata of the skin, needles each containing 5–10 mg. of element are implanted in and around the lesion, it may be surmised that the technique employed is largely one of high intensity with short duration. If the application is repeated two or three times within a period of three or four weeks, as practised at Stockholm for carcinoma of the cervix uteri, this line of treatment will be seen to conform to some modern practices, although in Great Britain, in America, and on the Continent of Europe the present tendency is to employ relatively small linear intensities for periods of a week at least in the treatment of carcinoma of the mouth and tongue, carcinoma of the skin, and carcinoma of the breast—to mention three main sites of application. The explanation of this practice may lie in the fact that only radium element is used at Christchurch, a procedure which does readily allow of changes in technique. The extraction of radium from fixed containers, its remeasurement, and, finally, its redistribution, is a lengthy business, even where highly skilled technical

help is available. It is for this reason that radium centres which at their conception adopted principally an emanation technique have reaped the benefit of being able to adopt any technique which the experience of other schools has shown to give better results than their own. At Christchurch the best results were apparently obtained in menorrhagia where, of 76 cases treated since 1924, 73 are free from symptoms. The routine treatment for this condition was 50 mg. RaE screened by 1 mm. of platinum and 1 mm. of rubber for 24 hours. In carcinoma of the cervix uteri 26 out of 48 cases treated between 1925 and 1929 are alive, and of 13 cases treated in 1925 4 are still living. The report emphasises the fact that no cases are refused treatment, and that this tends to make the results suffer by comparison with centres where cases are selected. Two cases of primary carcinoma of the breast were treated by implantation for 24 hours with satisfactory immediate results, but the treatment of carcinoma of the breast, recurrent after surgical operation, is described by Dr. Fenwick as a sorry business—an opinion which will be shared by most experienced workers. Some 88 cases of "ulceration and growth on lip" have been treated since 1924. Rightly, in the opinion of an increasing number of workers, tissue was not removed for diagnostic purposes; as no case was treated that had "any sign of glands under the chin." Dr. Fenwick must have had a remarkably early series of cases to deal with. Unfortunately, 34 of the series failed to report again. Of 117 cases of previously untreated rodent ulcer, 112 responded fully to treatment, the technique of which is not given. Cases recurrent after treatment by X rays, caustics, or surgery did not respond so well. For nævi and angiomata radium is said to have proved a specific remedy; of 115 cases treated, 12 are still under treatment and 103 are symptomless. These are striking figures if it is implied that no stigmata such as telangiectasis remained. Deep X ray treatment is also given at Christchurch, either alone or to the lymphatic drainage area after the primary growth has been treated by radium. The activities of the department also include treatment by ultra-violet light and endothermy.

## THE SERUM TREATMENT OF ACUTE ANTERIOR POLIOMYELITIS.

A FEW months ago, at a symposium on poliomyelitis held in Melbourne, Dr. Jean Macnamara commented on the encouraging results recorded[1] in Australia and New Zealand with the serum treatment of this disease. In 1924–25 the serum of convalescents was used extensively in Wellington, Dunedin, and other centres, and from the observations made during this trial period the New Zealand Department of Health drew such favourable conclusions that in its report to Congress it stated: "Human convalescent serum was found to be a specific in producing prompt recovery and preventing paralysis if given in the preparalytic stage." It is agreed that once paralysis is established no benefit is to be got from the administration of serum except in the uncommon cases of the "spreading" (so-called Landry) type. The difficulty of recognising poliomyelitis in the preparalytic stage has often been emphasised, but in Wellington after the first few weeks of the epidemic, as a result of the awakened interest of the public and the alertness of the medical profession, 60 per cent. of the patients were admitted to hospital at a stage suitable for serum treatment. In Victoria, Australia, the experience of serum treatment in the outbreak of 1925 was such as to lead to the establishment of a serum service for the State, and, although no figures are yet available, Dr. Macnamara's remarks on the results obtained with its help in the 1928 epidemic were very encouraging. In two papers published within the last few weeks records have been given of the results of similar treatment in Canada and in the United States. In the *Canadian Medical Association Journal* a résumé[2] is given of the results in the Manitoba outbreak last year, and in a paper read before the American College of Physicians in February, 1927, but only now appearing in print, Dr. Wardner Ayer[3] gives the results of 126 cases in which serum was administered, representing his personal experience of the treatment up to the end of 1926. In Manitoba last year it appears that 161 cases were recognised; 74 were treated with serum in the preparalytic stage, 54 received no serum, and 33 had serum after the onset of paralysis. We may consider first the group in which no serum was given, as it shows the results of the disease uninfluenced by immune therapy; in this group 26 per cent. of the patients recovered without paralysis, 63 per cent. were paralysed, and 11 per cent. died. In the group in which serum was given late there were many severe cases, and allowing for this the outcome was similar to that of the untreated group; 22 per cent. recovered without paralysis and 45 per cent. with residual paralysis, while 33 per cent. died. Of the cases treated with serum in the early stages 93 per cent. made a complete recovery, 7 per cent. had residual paralysis, and there were no deaths. The group is divided into two subgroups, the first consisting of 57 cases which received a single dose of serum intramuscularly and the second of 17 other cases in which serum was given by other routes or in more than one dose, but the results in the two subgroups were almost identical. The figures of the epidemic are subjected to considerable analysis, and the results of treatment are given for separate months and for town and country cases. From the second paper we learn that of the 126 patients to whom Dr. Ayer gave serum at Syracuse, New York, in the six years 1921–1926, 93 (74 per cent.) recovered without paralysis. Forty-six cases were seen in the first 24 hours of the illness; in these there was one death, one extensive and three mild paralyses, while 41 patients (85 per cent.) recovered without demonstrable involvement of the spinal cord. Sixty-nine were seen and given serum during the second 24 hours, and the percentage of complete recoveries was 71 (49 patients). But of 11 patients to whom serum was given more than 48 hours after the onset, three died, three were severely paralysed, two mildly paralysed, and only three recovered without paralysis. (In this group the proportion of recovery is approximately that of the untreated disease.) The best average results seem to have been obtained in 1924, when Syracuse had 133 cases with 12 deaths; 61 cases were diagnosed in the preparalytic stage and treated with serum, and 50 of them (82 per cent.) ended in complete recovery without paralysis.

In Victoria, from the experiences of 1925 and 1928, it was judged that the best results were secured by combining intravenous and intrathecal administration of serum. The doses were varied according to the size of the patient but were not less than 50 c.cm. In Manitoba the serum was given intramuscularly, the standard dose was 25 c.cm., and the recorded results are as good as any. In Syracuse Ayer used the spinal route exclusively, considering the intravenous route wasteful of serum; the amount given was from 10 to 25 c.cm. according to the size and age of the patient, but it should be noted that with these doses it is his practice to give in some cases a second dose of serum. Further, Ayer, who got his serum by advertising for donors, apparently had not always a sufficient supply available. In 31 cases he gave patients antipneumococcal serum, and in eight of these he followed it up with a dose of human convalescent serum; but as far as he could determine there was no great difference between the results of giving antipneumococcal serum and those of specific therapy by human serum, and he suggests that the beneficial effect of non-specific sera may be partially due to phagocytic action consequent upon additional aseptic meningitis excited by the introduction of serum into the theca. At the same time he strongly

[1] Med. Jour. of Australia, 1928, ii., 266.

[2] McEachern, J. M., Chown, B., Bell, L. G., and McKenzie, Mary: Can. Med. Assoc. Jour., April, 1929, p. 369.

[3] Ayer, W.: Amer. Jour. Med. Sci., April, 1929, p. 540.

urges the use of human convalescent serum when available.

The greatest difficulty in the application of serum therapy to poliomyelitis in this country lies in recognising the disease in the preparalytic stage, and it has been seen that in other countries that difficulty has not been insuperable. Diagnosis depends on examination of the cerebro-spinal fluid—which must be done at once—but the clinical signs and symptoms by which the preparalytic stage is provisionally recognised are as follows (Ayer):—

1. *Fever:* never high, the average being 102° F.
2. *Headache:* severe, frequently general but may be only nuchal: it may be absent but is then replaced by severe pain in the back.
3. *Rigidity of the neck:* distinct resistance to anterior flexion; there is never lateral limitation of movement. (The "spine sign" consists in an unwillingness to bend the body forward.)
4. *Tremor:* fine trembling of the lips and hands especially during movement, as when taking a glass of water: there may also be coarse twitching in sleep.

*Accompanying symptoms* are: vomiting (once or twice on the first day), constipation, retention of urine for 12–24 hours, sweating about the lips and neck, and a certain degree of mental apathy, though the patients when once roused are bright and alert and may be irritable.

Early diagnosis is naturally easier when an epidemic is in progress, but even in the absence of any definite epidemic much could probably be done during the season when poliomyelitis is prevalent to facilitate its early recognition not only by putting practitioners on the look-out for its early signs but also by guarded instruction of parents and teachers through the newspapers and wireless, with insistence on the importance of calling the doctor immediately to a suspected child, time being an essential factor.

## LIVER IN SECONDARY ANÆMIA.

THE value of liver in pernicious anæmia requires no further confirmation, but its effect on secondary anæmia has so far remained somewhat uncertain. Since the experiments which originally led to the adoption of treatment were done on dogs suffering from anæmia induced by hæmorrhage it is hard to believe that liver has no influence on secondary anæmia of this kind at least. The matter has recently been investigated by Dr. W. P. Murphy and Dr. J. H. Powers[1] at the Peter Bent Brigham Hospital at Boston. Working on 17 cases of anæmia due to acute or chronic hæmorrhage they have found ample evidence of the beneficial effect of whole liver, their patients receiving at the same time a carefully prepared diet comprising large quantities of fresh fruits and green vegetables and iron in full therapeutic doses. In our present issue Dr. S. C. Dyke reports on a smaller series of cases observed at the Royal Hospital, Wolverhampton. Instead of whole liver Dyke used a commercial liver extract and he also early came to the conclusion that the effect of the liver was greatly enhanced by the simultaneous administration of iron. Arsenic was found to have little effect in improving the blood picture, but Dyke's series of observations is admittedly small. Comparing these two papers it is interesting to observe that while the Boston patients were on a specially designed dietary and the Wolverhampton ones on the ordinary hospital diet, the results were very much the same. Whipple and Robscheit-Robbins[2] having stated that the action of whole liver and of liver extract are not identical, it may be noted that Dyke's patients on a commercial liver extract and those of Murphy and Powers on whole liver showed a very similar response. Even better results might perhaps have been got by combining whole liver with an extract, and this is a possibility which needs further exploration. It must be noted that in both the American and the English series all those patients recorded as showing a response to liver therapy were suffering from secondary anæmia resulting from hæmorrhage. It remains to be seen what the effect of the treatment may be in other types of anæmia.

[1] Murphy, W. P., and Powers, J. H.: Surg., Gyn., and Obst., April, 1929, p. 490.
[2] Whipple, G. H., and Robscheit-Robbins, F. S.: Amer. Jour. Physiol., 1925, lxxii., 408.

## THE ASSESSMENT OF PHYSICAL FITNESS.

IT is hard to estimate physical fitness accurately, and if serious mistakes are not very common we must attribute this to experience and common sense rather than to the scientific exactness of the methods at our disposal. A person's general fitness depends essentially, though not entirely, on his cardiac efficiency, and this is the factor investigated by most of the usual tests. Modern radiological and electrocardiographic examination not being possible in the vast majority of cases in which the heart's action is to be studied, the practitioner must often turn to readily available and simple methods. These are based upon the heart's response to a varying degree of exertion, and are almost numberless in their modifications. Two such tests,[1] used in the examination of the University crew at Cambridge are the "dumb-bell test" and the "40 mm. Hg U-tube test"; in the former the effect upon the pulse-rate of hard dumb-bell exercise for one minute is noted, and in the latter, which is also employed in examining candidates for the Royal Air Force, the pulse-rate is counted in 5-second periods whilst the subject is maintaining the level of a column of mercury which he has blown up to a height of 40 mm. In both cases rapid and undue increase of pulse-rate and a delayed return to normal are considered unsatisfactory. Such moderate physical exercise should not increase the pulse-rate in a fit man by more than 20 or 30 beats per minute; at the same time the amount of the rise is possibly less significant than the length of time taken before its return to normal, which should be not more than 1½ minutes at most. All such tests, as well as those relying upon changes in systolic and diastolic blood pressure with movement or exertion, are open to many fallacies. They depend largely on the reserve strength of the heart muscle and do in fact offer a fair indication of this power; but they do not give a reliable answer to the question how much exertion may be harmful to a heart and how much may be beneficial. And this, of course, is often just what the medical man and his patient want to know. Dr. F. W. Law's investigation, to which a reference has already been given, leads him to conclude that no exercise, however strenuous, can permanently harm the healthy trained man, and quotes F. Bainbridge as saying that "there is no direct evidence that, provided a man is physically sound and in good health, exercise, however severe, is ever harmful or followed by serious after-effects." It is, however, exactly in the elimination of those not "physically sound" that the difficulty arises. Daily heavy work, and still less our cardiac efficiency tests, may not always bring to light latent cardiac weakness; as Hoffmann has written "the heart gives no warning of the moment at which exertion becomes harmful." Clive Rivière, for example, noted cardiac dilatation persisting two and a half months after a week's holiday of walking and climbing in 10 out of 40 school-boys he examined (as noted by Law), and there is no doubt that definite dilatation of the heart may follow over-exertion in the unfit, with but little subjective evidence of disorder. On the other hand, the healthy heart becomes slightly smaller immediately after violent exercise, as has been shown radiographically by Moritz, Mobitz and others, and many deny that physiological hypertrophy ever follows excessive athletics. Deutsch[2] found that 90 per cent. of swimming and ski racers had hearts of normal size, and holds the view that "sport-training means heart-training,"

[1] Law, Frank W.: Some Clinical Aspects of Muscular Exercise, Quart. Jour. Med., April, 1929, p. 461.
[2] Deutsch, F.: Das Sportherz, Wien. Med. Woch., 1928, lxxviii., 632 and 670.

true fitness implying an absence of enlargement of the heart with exertion. According to this view, hypertrophy of the heart in an athlete suggests over-strenuous exercise of an "unfit" subject, but Law, after his own rowing career, finds definite enlargement of his heart which by all clinical and subjective signs is perfectly healthy, and concludes that physiological enlargement of a healthy heart may result from hard and prolonged exercise. Deutsch says that approximately one-quarter of rowers he examined had enlarged hearts, the proportion being much greater than among men going in for any other sport. Whether the "sports heart" is always a heart which was already unhealthy before athletics were begun is still a matter for discussion, but it will be generally agreed that lasting damage to the heart from over-exertion is exceedingly rare in a previously healthy person; the figures of Morgan, quoted by Law, concerning the after-histories of the 255 survivors of the Oxford and Cambridge boat-race crews from 1829 to 1869 bear out this opinion. The practitioner's task of detecting people in whom harm may result is thus all the more important, and the decision may be one of the most difficult of those he is called on to make. A careful clinical history, a detailed physical examination, a judicious consideration of the results of functional efficiency tests, combined with a study of the urine and if possible of radiological and electro-cardiographic records are his guides. First and foremost, however, he must be given the chance of examining his patients properly. The necessity for medical examination—if possible at suitable intervals—of all those who undertake strenuous exercise can hardly be too strongly emphasised.

## THE COCKTAIL HABIT

ALCOHOLISM has for several generations been regarded as a disease of the poorer classes. It is, however, becoming increasingly obvious that the balance is shifting, and some authorities consider that before long the incidence will preponderate among persons of wealth and leisure. The reason for this change lies in the increase of the "cocktail habit." Before the war cocktails were regarded as an American innovation; they have now become a part of the social life of every European country. They are taken primarily as appetisers, but tend to degenerate easily into a pastime. Their attraction is partly due to their endless variety, and their chief danger lies in the powerful effect which they exert by reason of their aromatic constituents. The alcohol in a cocktail, which composes 15 to 30 per cent. of its volume, may be contained in gin, whisky, or brandy, the vermouth, angostura, and liqueurs, which are added as flavourings to the different varieties, contain essential oils with a strongly exciting action on the central nervous system. The reason why the alcohol in a cocktail produces an effect in the central nervous system more than four times as great as that of the same amount of alcohol taken in beer is explained by Prof. W. E. Dixon in the *British Journal of Inebriety* for January. The spirit is absorbed very rapidly from the empty stomach, its absorption being facilitated by the irritant oils. During its passage from the blood into the nerve-cells it produces a great and sudden increase of tension on the outside of the membranes, thus causing a powerful stimulant action which continues until the tension becomes equal in the nerve-cells and the blood. This action, which lasts for about a quarter of an hour, is different from, and much more potent than, the subsequent ordinary effect of the dose of alcohol. According to Prof. Dixon, the persons who take a cocktail to diminish nervous strain and stimulate the appetite are not the true cocktail addicts. The most deleterious effects are produced in young men and women who drink to remove their shyness and to produce excitement. The continuous use of cocktails injures the stomach and lays the foundation for the drinking habit, which is easily acquired by the young. They supply for a moment the new sensations, strong emotions, and varied interests which youth desires, and tend more surely and rapidly, in Prof. Dixon's opinion, to become a habit than do any other kinds of beverage. Prof. Georges Guillain, in a recent lecture before the Academy of Medicine,[1] which we noticed in our issue of May 25th,[2] takes a serious view of the increase of cocktail drinking in France. Cocktail parties, he says, have replaced tea parties in many modern drawing-rooms. The miniature bar has become an article of household furniture, and is part of the equipment of the furnished flat and the motor-car. The cult is not confined to Paris, but pervades country houses, watering-places and even spas. He gives recipes for ten of the commonest cocktails, to show the large quantity of alcohol they contain, and remarks that young persons never used to take whisky or gin before their meals, but that nowadays they drink several of these mixtures every day. He maintains that he is constantly observing most serious symptoms among the young people who indulge in this habit. Their ailments include all kinds of digestive trouble, permanent tachycardia and attacks of syncope, insomnia, neurasthenia, anxiety, and failure to concentrate. Many divorces, motor accidents, and ruined careers are, he holds, due directly to habitual indulgence in cocktails, but it is possible that cause and effect are here rather difficult to disentangle. Prof. Guillain claims to have witnessed a dramatic transfer of the incidence of alcoholic polyneuritis which formerly predominated among the working classes, especially, it seems, those suffering from tuberculosis, to young men and women of the wealthy classes. He draws a picture which has fortunately not yet been equalled in this country, but the evil, even here, is none the less well established and demands the determined opposition of every medical practitioner. The rigid rules laid down by all physicians for cases of suspected or established juxta-pyloric ulcer concern the avoidance of alcohol on an empty stomach, and the universal application of the precept would prevent much chronic dyspepsia and be found in the long run not to detract from the gaiety of social life.

## REALITY.

IT is not so long ago that what were called "functional diseases" were treated with a mixture of contempt and brutality by all except a few medical men in advance of their times. It was a period when to be "real" was to be concrete; diseases had to have a tangible morbid anatomy and the deepest probings of the chemists and physicists into the structure of experience found their most complete satisfaction in the production of models made of billiard balls or machinery. Biologists in general, and those involved in medicine in particular, often felt dissatisfied, especially when they were assured (as they frequently were) that the only road of progress was the "real" path carved by the "exact sciences." It is therefore particularly impressive that it should be a physicist in Prof. A. S. Eddington's unrivalled position who comes to tell us that the physical explanation of the world is no more concrete than anything else, and that it is quite incomplete in that it fails to include large parts of our experience. He restated his position recently in the Swarthmore Lecture before the Society of Friends.[3] The modern physicist has given up his old objective of models; he aims instead at a set of symbols and mathematical equations which they will satisfy. And, strangest change of all, he no longer cares what the symbols stand for: he seeks to know how reality behaves, not what it is. In consequence he no longer wants to condemn the spiritual side of our experience as illusory because it is not concrete. "Mind," he says, "is the first and most direct thing in our experience; all else is remote inference."

[1] Académie de Médecine, 1929, p. 538.
[2] THE LANCET, May 25th, p. 1113.
[3] Science and the Unseen World. George Allen and Unwin. 1s. 6d.

The physicist moreover not only does not dogmatise about the nature of the reality with which his symbols deal, he insists that his professional methods of inquiry cannot penetrate behind the symbols and are quite unsuited to throw light on what they represent. Prof. Eddington—we do not know how far his colleagues are with him here—is not content to leave it at that: he frankly claims that it is by our spiritual nature that we may attain the interpretation of the symbols which science cannot give. No one will suspect the Plumian Professor of advocating loose thinking when he urges upon us the necessity of a mystical outlook. If we limit ourselves and take no cognisance of anything but "scientific facts" as ascertained through our sense organs, we are denying one of the most real items of experience, that consciousness is not wholly or even primarily a device for receiving sense impressions. Science is good enough as far as it goes: the scientist is guided by no false or mean light. But it has nothing to tell us of its own passion for truth, of men's response to beauty, of our inner light of guidance and conviction: they are none the less "real."

## THE REOPENING OF THE WELSH NATIONAL MEDICAL SCHOOL.

THE terms on which the wards of the Cardiff Royal Infirmary will be reopened to students in September next, of which the main provisions were announced in THE LANCET last week, have been formally and unanimously ratified at a meeting of the Board of Management of the hospital. The unanimity was the result of a special appeal made by Sir William James Thomas, the benefactor to whose unquenchable optimism the School owes not only its inception but also continuous encouragement in the struggle against direct and indirect opposition. The new agreement provides that the unit system shall continue, but that the non-professorial clinics are to be organised in future under the supervision of a Board of Clinical Studies on which members of the honorary staff are to be fully represented. This Board is, moreover, to have direct access to the Board of Medicine of the College, though before any action is taken the Faculty of Medicine of the University, on which the full-time professors have a predominant vote, will be consulted. In this way the honorary staff of the Royal Infirmary are aasured that attention will be given to their views on matters connected with clinical teaching. A clause providing that assistants in the professorial units shall "normally" be full-time officers will be put into force as soon as funds permit. The only clause which still evoked a protest even at this final meeting, though it had already been modified to the limit of safety, was the provision that the infirmary shall hold all its beds at the disposal of the School for the purpose of clinical teaching. The very fact that objections were offered to this clause suggests that the College authorities were wise in their resolution to refuse to enter into any agreement without such a safeguard. In its absence, the resignation of certain members of the honorary staff of the hospital from their posts as university teachers reduced the number of teaching beds below that required for recognition of the clinical school by the University of London and the Conjoint Board and led to its closure. These licensing bodies will have to be convinced of the impossibility of a recurrence of such a withdrawal before they reconsider their decision, and, moreover, if the students scattered through the country are invited to return to their National School their careers must not again be imperilled. The new agreement has been drawn up expressly with a view to ensuring that the clinical curriculum and the organisation of the teaching are acceptable to the honorary staff of the hospital, and is to continue in force for a period of seven years. Machinery is, however, provided for the revision of the terms in three years, should this be considered desirable by either party. Ample opportunity will thus be found for adjustment of difficulties through legitimate channels, and in view of the disaster of last year, no clause designed to render ineffective a threat of direct action can be fairly stigmatised as either unnecessary or harsh. The early history of some of the most successful medical schools has been a stormy one, and the staff of a hospital which has become part of a teaching school cannot be expected immediately to welcome the changes involved. But now that agreement has been reached we trust that the Welsh National Medical School will be re-established on a firm foundation and will fulfil its early promise.

## THE FATE OF PATIENTS WITH PLEURISY.

APPRECIATION of the tuberculous nature of most cases of "idiopathic" pleurisy has focused attention on the treatment to be given after the acute symptoms have ceased. Is it enough to send the patient away for a month's holiday, with vague injunctions about rest and exercise, or should he be kept under close medical supervision and given several months of educational treatment in a sanatorium? There are some interesting statistics wherewith to answer these questions. Among the most important are those of the Swedes, Allard and Köster, whose investigations in the period 1910-11 showed that in approximately half their cases of pleurisy pulmonary tuberculosis became active at a later date. The more recent investigations of the Norwegians, Scheel and Foien, showed that of 812 patients suffering from pleurisy in the period 1916-25, and examined early in 1927, as many as 182, or 22·4 per cent., had subsequently developed pulmonary tuberculosis which in 80 cases proved fatal. In the *Norsk Magazin for Laegevidenskapen* for April, 1929, Dr. L. B. Smith shows how the expectation of tuberculosis in this class of case can be bettered by a strict régime. At the Landeskogen Sanatorium, to which he is attached, his chief, Dr. E. T. Holter, if he cannot find room in his sanatorium for a patient with "idiopathic" pleurisy, gives him definite instructions on what he shall do. He is told to rest on his bed or a sofa for five to six hours every day, and is forbidden to do any work at all for at least three or four months, this prohibition holding so long as the rate of sedimentation of the erythrocytes is abnormal. In the period from May, 1916, to June, 1924, there were treated at the Landeskogen Sanatorium 90 patients whose pleurisy was the only clinical sign of pulmonary tuberculosis. Their subsequent fate was investigated in 1928. Of the 90 cases 66 were associated with a pleural effusion, whereas in the remaining 24 the pleurisy was "dry." The patients' ages ranged from 13 to 41 years, and the average duration of the interval between the onset of the pleurisy and admission to the sanatorium was six months. As many as 62 were under normal weight, and in 74 cases the patient's general health was poor. The average duration of residence in the sanatorium was 121 days. On discharge, 82 were fully fit for work, and 8 were partially so. Only one of these patients could not be traced in 1928. Of the remaining 89, as many as 79 were perfectly well. Three suffered from tuberculosis, and were only partly fit for work, while seven were found to have died of tuberculosis. Looked at only from the statistical angle, these figures are, of course, far too small to carry much weight. But in conjunction with our present-day knowledge of the evolution of pulmonary tuberculosis they do emphatically indicate the profit accruing to a patient from the interpretation by his medical adviser of "idiopathic" pleurisy as a condition requiring rigorous treatment and supervision for a long time.

SMALL-POX RESTRICTIONS IN FRANCE.—The regulations imposed last April on travellers from England obliging them to produce evidence of vaccination or submit to supervision of their movements has now been abandoned by the French Government.

# The Clinical Interpretation of Aids to Diagnosis.

*A Series of Special Articles contributed by Invitation.*

## XXXIII.—PLEURAL FLUIDS.*

ALTHOUGH it is unwise to place too much reliance on laboratory reports of a pleural effusion, these may be very valuable, not only as additional evidence for diagnosis, but also as an aid to treatment.

Pleural fluids may be considered under the following headings: (1) clear; (2) thick, of which the second class may be further subdivided into (*a*) non-purulent, (*b*) purulent.

### CLEAR PLEURAL FLUID.

On inspection the liquid is usually pale yellow in colour and clots on standing. The clot is firmer in cases where the effusion is the result of inflammatory changes—i.e., an exudate—than when it is a transudate, for example, in a case of heart failure. A small quantity of blood may be present, but a large amount makes the liquid thick. The fluid is usually odourless unless contaminated, in which case it will rapidly become purulent.

#### *Cytology.*

*Blood.*—A few red corpuscles may be seen and are not important. To be of any clinical significance the blood must be present in sufficient quantity to be visible on naked-eye inspection.

*Polymorphonuclear neutrophil leucocytes* are seen in acute inflammatory conditions. Where polymorphonuclear cells are in excess the infection is probably due to a pyogenic organism, and if they are found in a clear effusion it is probable that the fluid will become purulent. These leucocytes are present in normal blood, so that in any effusion containing blood they will be found in the normal proportion to the red corpuscles; this, of course, does not indicate a pyogenic infection.

*Small lymphocytes* are present in excess in chronic inflammatory diseases, of which tuberculosis is by far the most common. In rare cases of long-standing effusion from other causes, an excess of small lymphocytes may be seen. Syphilis of the pleura is extremely rare, but if present would cause a preponderance of small lymphocytes in the effusion.

Widal and Ravaut in 1900 expressed the opinion that in cases of pleural effusion an excess of small lymphocytes indicates tuberculosis, and an excess of polymorphonuclear neutrophils indicates infection by a pyogenic micro-organism, and this view is generally upheld to-day.

*Endothelial cells* derived from the lining of the pleura may be present in excess and indicate a transudate. They are seen, therefore, in effusions occurring in cases of renal disease, heart failure, or obstruction of the circulation from neoplasm or other causes. It is often stated that an excess of endothelial cells is diagnostic of neoplasm. This is not so, but it is rarely present in cases of tuberculosis or pyogenic infections; thus, if there is no evidence of renal or cardiac disease in a case with a preponderance of endothelial cells in the pleural fluid, new growth must be suspected by a process of exclusion.

*Eosinophil cells* are rarely found in excess and are of no great clinical significance. They may be regarded as intermediary between the acute infection characterised by an excess of polymorphonuclear leucocytes, and the chronic stage where small lymphocytes are in excess. It is said that the presence of a large number of eosinophils in a pleural effusion is evidence against tuberculosis, and very few of the recorded cases have turned out to be tuberculous. In the uncommon cases when a clear effusion develops after pneumonia an excess of eosinophils makes it probable that the fluid will not become purulent, and is, therefore, evidence of a good prognosis. If the fluid is not from the pleural cavity but from a hydatid cyst, eosinophils will be present in great excess.

*Tumour cells.*—Cases have been described where a diagnosis has been made by finding free carcinoma or sarcoma cells in the pleural fluid. I have never come across such a case myself, and although they do occur they are extremely rare. It must be remembered that it is often impossible to tell the exact nature of certain cells in various stages of degeneration. Lymphocytes or endothelial cells might well be confused with sarcoma or carcinoma cells.

#### *Bacteriology.*

In a clear effusion the usual organism is the tubercle bacillus; in a purulent effusion the pneumococcus; in a cloudy effusion the streptococcus. Other organisms, such as staphylococci, the influenza bacillus, Friedländer's bacillus, the typhoid bacillus, &c., have been found but very rarely.

In the early stages of a tuberculous pleural effusion tubercle bacilli are not found as a rule, and even injection into a guinea-pig generally gives a negative result. In long-standing tuberculous effusions, and in nearly all cases of tuberculous empyema, however, the bacilli are almost always to be found. Various methods of looking for tubercle bacilli in pleural effusions have been described, but in doubtful cases the most reliable method is injection into a guinea-pig.

#### *Chemical Examination.*

This is not of great importance. The fluid is alkaline. Albumin is present in greater quantity in exudates than in transudates, and an exudate may become practically solid on boiling. The specific gravity of a transudate is usually below 1018, and that of an exudate above this.

The following table shows the chief characteristics of the common types of clear pleural fluids.

| — | Appearance. | Coagulable proteid. | S.G. | Cytology. |
|---|---|---|---|---|
| | | Per cent. | | |
| Transudates— | | | | |
| Renal .. .. | V.p.y. | 2 | 1008 | Endothelial cells. |
| Cardiac .. | P.y. | 3 | 1016 | |
| Neoplasm .. | P.y. or hæmorr. | 3 | 1016 | |
| Exudates— | | | | |
| Tuberculous .. | Straw coloured. | Over 4 | 1020 | Sm. lymph. |
| Pyogenic infections .. | Yellow and sl. turbid. | Over 4 | 1024 | Polymorph. |

V.p.y. = very pale yellow; hæmorr. = hæmorrhagic; sl. = slightly.

### THICK EFFUSIONS.

#### *Non-purulent.*

Non-purulent effusions vary from the cloudiness seen when there is a slight excess of cells to the dense opacity of true chylous effusions. Blood may be present in any effusion and render it opaque. Hæmorrhagic effusions are said to indicate the presence of new growth, but they are not infrequently seen in cases of tuberculous effusions, and in the majority of cases due to malignant disease the fluid is clear.

In an analysis of 26 cases of carcinoma of lung, Dr. T. C. Hunt[1] found that an effusion formed in 13, and of these it was hæmorrhagic in 5, clear in 6, purulent in 1, and pseudochylous in 1. Bleeding, however, is more common in such cases, so that a large quantity of blood in an effusion may be taken as some evidence of new growth. In most cases the bleeding has taken place into an effusion; a true hæmothorax is usually the result of trauma. Sometimes the fluid appears milky owing to the presence

* An article on the Treatment of Empyema, by Dr. Burrell, will appear next week.

[1] THE LANCET, April 13th, 1929, p. 759.

of albuminous bodies or leucocytes. In the early stages of an inflammatory effusion, before it has become purulent, the fluid is often cloudy owing to the polymorphonuclear neutrophils, this is commonly seen in cases of streptococcal effusions.

Cholesterol may be present in an effusion of long standing, and gives the fluid a shimmering appearance like gold paint dissolved in spirit.

*Chyliform fluids* are sometimes seen when the cells are undergoing fatty degeneration. They are not common, but have been found in cases of endothelioma of the pleura or of chronic tuberculosis. The fat globules can be seen microscopically and stained with osmic acid. They can also be dissolved out with ether. True chylous effusions are very rare, but may result from rupture or injury to the thoracic duct, filariasis, pressure on the thoracic duct from tumours, &c., or occlusion of the left subclavian vein.

*Purulent Effusions.*

As a rule the pus is not offensive, but in some cases it may be extremely so. The offensive odour is due to contamination by a saprophytic organism, and is evidence of a communication either with the lung or the alimentary tract.

Empyema following spontaneous pneumothorax in cases of bronchiectasis or abscess of lung has very offensive pus, and, in any case, when there is a bronchial fistula the pus is apt to become offensive. The three usual types of empyema are those due to the pneumococcus, streptococcus, and tubercle bacillus.

*Pneumococcal empyema.*—This usually follows pneumonia. The pus is yellow, very thick, contains many flakes of lymph, and is so characteristic that it is possible to tell a pneumococcal empyema by the mere inspection of the pus in the great majority of cases. Pneumococci are present in large numbers, and usually in pure culture.

*Streptococcal empyema.*—In this case the effusion is usually clear or only slightly turbid in the early stages, but gradually becomes thicker and more purulent as the disease progresses. Streptococci are present in long chains. The condition is usually secondary to a streptococcal pneumonia such as that following influenza.

*Tuberculous empyema.*—The pus in these cases varies from a rather dirty yellow to a greenish-yellow colour. It may resemble pneumococcal pus, but has not the same thick cream-like appearance. Tubercle bacilli are usually present in large numbers, and the fact that no other organisms are found in the majority of tuberculous empyemata suggests that the pus is the result of the tubercle bacilli alone and not of a super-imposed infection by other organisms. The peculiar greenish tint of tuberculous pus is not seen in cases due to pyogenic organisms, and this also is opposed to the view that purulent effusions are due to mixed infections and not to the unaided action of the tubercle bacilli.

L. S. T. BURRELL, M.D., F.R.C.P.,
Physician, Royal Free Hospital and Hospital for Diseases of the Chest, Brompton.

MANCHESTER'S TUBERCULOSIS DISPENSARY.—A writ has been served on the Town Clerk of Manchester, by which a resident seeks to restrain the Corporation from building a new tuberculosis dispensary and offices on a vacant site in Oxford-road opposite the Royal Infirmary.

HOSPITAL PLANNING.—Mr. H. Percy Adams, F.R.I.B.A., last week read a paper before the Royal Institute of British Architects on "English Hospital Planning." He pointed out that the ideal site for a hospital is on high ground and of large area. Fifty beds to the acre, as had been suggested, would be all very well in the country, but impossible in towns. There should be a gentle slope from north to south or south-east, with good approach roads on the northern side. The buildings should be well sheltered by trees or rising ground, a sub-soil of chalk, rock, or gravel was best, and water, gas, and good drainage should be available. The advantage to patients of hospitals outside urban areas would be enormous; the disadvantage would be the slight inconvenience to the medical staff and friends visiting patients.

# Special Articles.

## MEDICAL CANDIDATES FOR PARLIAMENT.

SUCCESSFUL AND UNSUCCESSFUL.

THE following is a complete list of medical men and women entitled to sit in the new House of Commons. The result of the Scottish Universities poll had not reached us as we went to press:—

| *Members.* | *Constituency.* | *Party* |
|---|---|---|
| Rt. Hon. C. Addison .. | Wiltshire (Swindon) .. | Lab. |
| Dr. Ethel Bentham .. | Islington (East) .. | Lab. |
| Dr. A. Vernon Davies .. | Lancashire (Royton) .. | C. |
| Dr. Walter E. Elliot .. | Glasgow (Kelvingrove) | C. |
| Dr. R. Forgan .. .. | Renfrew (West) .. | Lab. |
| Dr. F. E. Fremantle .. | Hertford (St. Albans) .. | C. |
| Mr. H. C. Haslam .. | Lincolnshire (Horncastle) | C. |
| Mr. Somerville Hastings | Reading .. .. | Lab. |
| Dr. J. Hunter .. | Dumfriesshire .. .. | L. |
| Dr. E. Graham Little .. | London University .. | Ind. C. |
| Dr. H. B. Morgan .. | Camberwell (North-West) | Lab. |
| Dr. J. H. Morris-Jones | Denbigh (Denbigh) .. | L. |
| Dr. Drummond Shiels .. | Edinburgh (East) .. | Lab. |
| Dr. Alfred Salter .. .. | Bermondsey (West) .. | Lab. |
| Prof. T. Sinclair .. .. | Queen's University, Belfast | C. |
| Dr. G. E. Spero .. .. | Fulham (West) .. | Lab. |
| Dr. J. H. Williams .. | Carmarthen (Llanelly) .. | Lab. |

*List of Medical Candidates for Parliament.*

A list of medical candidates is here given, showing the individual position at the poll, and the number of votes registered. A dagger sign indicates membership of the last House of Commons, while an asterisk indicates that the candidate contested this or some other seat at the last General Election.

| Constituency. | Name. | Position at poll. | Votes registered. |
|---|---|---|---|
| *Universities.* | | | |
| London .. | Dr. Graham Little† | 1 | (1) Ind., 5,869<br>(2) L., 2,923<br>(3) C., 2,179 |
| Scottish .. | Sir George Berry† | — | — |
| | Dr. James Kerr.. | — | — |
| Queen's, Belfast | Prof. T. Sinclair † | U. | |
| *London Boroughs.* | | | |
| Bermondsey, West | Dr. Alfred Salter† | 1 | (1) Lab., 13,231<br>(2) L., 4,865<br>(3) C., 3,852 |
| Bethnal Green, S.W. | Dr. R. Dunstan* | 3 | (1) L., 8,109<br>(2) Lab., 6,849<br>(3) Com., 1,368<br>(4) C., 1,365 |
| Camberwell (Dulwich) | Dr. R. C. Cooke-Taylor* | 3 | (1) C., 15,009<br>(2) Lab., 9,309<br>(3) L., 6,442 |
| Camberwell, North-West. | Dr. H. B. Morgan* | 1 | (1) Lab., 12,213<br>(2) C., 9,808<br>(3) L., 5,559 |
| Camberwell (Peckham) | Dr. J. D. Cooke | 2 | (1) Lab., 15,751<br>(2) C., 10,246<br>(3) L., 6,187 |
| Fulham, West .. | Dr. G. E. Spero* | 1 | (1) Lab., 16,190<br>(2) C., 13,979<br>(3) L., 5,920 |
| Islington, East .. | Dr. Ethel Bentham* | 1 | (1) Lab., 15,199<br>(2) C., 13,641<br>(3) L., 11,136 |
| Wandsworth (Balham & Tooting) | Dr. C. W. Brook | 2 | (1) C., 18,181<br>(2) Lab., 13,449 |
| | Dr. W. H. Summerskill | 3 | (3) L., 8,533 |
| Wandsworth, Central | Sir Henry Jackson† | 2 | (1) Lab., 11,404<br>(2) C., 11,104<br>(3) L., 4,784 |
| *English Boroughs.* | | | |
| Birmingham (Moseley) | Dr. F. G. Bushnell* | 2 | (1) C., 33,820<br>(2) Lab., 15,733<br>(3) L., 9,388<br>(4) Lab., Left wing, 675. |
| Derby (2 members) | Sir Richard Luce† | 3 | (1) Lab., 39,688<br>(2) Lab., 36,237<br>(3) C., 24,553<br>(4) C., 20,443<br>(5) L., 11,317 |
| Manchester (Withington) | Dr. Joseph Robinson | 3 | (1) L., 20,948<br>(2) C., 19,063 |
| | Sir Thos. Watts† | 2 | (3) Lab., 7,853 |
| Newcastle-on-Tyne (West) | Dr. J. W. Leech | 2 | (1) Lab., 16,856<br>(2) C., 14,088<br>(3) L., 5,267 |

*Medical Candidates for Parliament—continued.*

| Constituency. | Name. | Position at poll. | Votes registered. |
|---|---|---|---|
| Oxford .. .. | Dr. R. O. Moon* | 2 | (1) C., 14,638<br>(2) L., 8,591<br>(3) Lab., 4,694 |
| Preston (2 members) | Dr. A. B. Howitt | 3 | (1) Lab., 37,705<br>(2) L., 31,277<br>(3) C., 29,116<br>(4) C., 27,754<br>(5) Ind., 2,111 |
| Reading .. .. | Mr. Somerville Hastings* | 1 | (1) Lab., 23,281<br>(2) C., 22,419<br>(3) L., 7,733 |
| Salford (North) | Dr. L. Haden Guest† | 2 | (1) Lab., 17,333<br>(2) C., 13,607<br>(3) L., 6,609 |
| *Scottish Burghs.* | | | |
| Edinburgh, East | Dr. Drummond Shiels† | 1 | (1) Lab., 13,933<br>(2) L., 8,687<br>(3) C., 6,889 |
| Glasgow (Kelvingrove) | Dr. Walter E. Elliot† | 1 | (1) C., 17,031<br>(2) Lab., 15,173<br>(3) L., 2,623 |
| *English Counties.* | | | |
| Derbyshire (Ilkeston) | Dr. J. V. Shaw .. | 2 | (1) Lab., 20,202<br>(2) L., 7,766<br>(3) C., 6,258 |
| Hampshire (Winchester) | Dr. R. A. Lyster | 2 | (1) C., 17,560<br>(2) Lab., 14,326<br>(3) L., 7,278 |
| Hertford (St. Albans) | Dr. F. E. Fremantle† | 1 | (1) C., 20,436<br>(2) Lab., 11,699<br>(3) L., 10,299 |
| Lancashire (Royton) | Dr. A. Vernon Davies† | 1 | (1) C., 15,051<br>(2) L., 13,347<br>(3) Lab., 10,763 |
| Lincolnshire (Horncastle) | Mr. H. C. Haslam† | 1 | (1) C., 12,837<br>(2) L., 10,168<br>(3) Lab., 3,683 |
| Middlesex (Brentford and Chiswick) | Dr. Stella Churchill* | 2 | (1) C., 14,025<br>(2) Lab., 10,978<br>(3) L., 3,957 |
| Middlesex (Hendon) | Dr. R. Lyons .. | 2 | (1) C., 31,758<br>(2) Lab., 15,434<br>(3) L., 13,449 |
| Wiltshire (Swindon) | Rt. Hon. C. Addison* | 1 | (1) Lab., 16,885<br>(2) C., 14,724<br>(3) L., 7,060 |
| *Welsh Counties.* | | | |
| Carmarthen (Llanelly) | Dr. J. H. Williams† | 1 | (1) Lab., 28,595<br>(2) L., 15,065<br>(3) C., 3,969 |
| Denbigh (Denbigh) | Dr. J. H. Morris-Jones .. .. | 1 | (1) L., 21,305<br>(2) C., 13,116 |
| *Scottish Counties.* | | | |
| Dumfriesshire .. | Dr. J. Hunter .. | 1 | (1) L., 16,174<br>(2) C., 12,984<br>(3) Lab., 6,687 |
| Linlithgow .. | Dr. John Fraser Orr | 3 | (1) Lab., 18,063<br>(2) C., 11,241<br>(3) L., 5,722 |
| Renfrew, West | Dr. R. Forgan .. | 1 | (1) Lab., 14,419<br>(2) C., 12,183<br>(3) L., 2,682<br>(4) Scot. Nat. 1,667 |

C., Conservative. L. Liberal. Lab. Labour. Com., Communist. Ind., Independent. U., Unopposed.

## MEDICINE AND THE LAW.

### *Charge of Unauthorised Reception of Lunatics.*

PROCEEDINGS taken at the South-Western police-court against two defendants charged with receiving five lunatics into their nursing-home at Clapham Common, not being licensed so to do, ended on May 30th in the dismissal of the summonses. The case had apparently arisen as the result of the operation of the Nursing Homes Registration Act. If an offence was to be established under the Lunacy Act, it was necessary to prove that the patients at the nursing-home were lunatics. Dr. Worth, medical superintendent of the Springfield Mental Hospital, Tooting, expressed the opinion that the five patients were certifiable, though the magistrate took the view that the opinion had not been given without hesitation. A second witness for the prosecution was Dr. Guy Foster Barham, medical superintendent at the London County Mental Hospital, Claybury, Essex; he confirmed Dr. Worth's opinion, but, under cross-examination, stated that with the exception of one patient, in whose case there was a possibility of suicide, he saw no evidence that the patients were dangerous to themselves or others. For the defence the medical attendants of the five patients were called; they denied that the cases were certifiable or that there was any occasion for placing the patients under restraint. One patient, it was stated, was an old lady of 89, suffering from senile decay, who had been sent to the nursing-home to be looked after. Mrs. Gowan, one of the defendants, said the patients were principally elderly people; all were attended by their private doctors. Sir Robert Armstrong-Jones, she said, had visited her establishment for the Master in Lunacy, and had certified none of the patients. A representative of the Director of Public Prosecutions sought to support the charge by contending that two mental experts had declared the patients certifiable, while the three witnesses who took the opposite view were general practitioners not necessarily experts in mental disease. The magistrate, however, preferred the opinion of the witnesses for the defence. Though not mental experts, they were, he said, qualified to express an opinion; they saw the patients frequently, whereas Dr. Worth had seen them only once. And so, with a comment from the magistrate that the legal definition of a lunatic was somewhat nebulous and with an expression of his surprise that the proceedings should have been deemed necessary, the case came to an end. It would appear unlikely that a magistrate would convict the proprietors of a nursing-home upon a charge of this kind under the Lunacy Act if there were any reasonable doubt of the patients being certifiable. It is common knowledge that there are few matters of medical opinion on which witnesses are found to be so far from unanimity.

### *Plea of Dual Personality.*

In two recent cases lately it has been suggested for the defence that the accused was suffering from a dissociated mind, a form of neurosis which in its higher degree is sometimes described as dual personality. As usual, this has caused a reference in court to Stevenson's story of Dr. Jekyll and Mr. Hyde, as though Stevenson was a mental expert and his tale a case of actual observation. In one of the recent cases the magistrate asked the natural question whether the plea was put forward as a defence to the charge or as an appeal for mitigation of sentence. This is a question to which the legal advisers of the accused must always address themselves; the answer depends upon the expert witnesses' evidence. In that particular case the accused was committed for trial to the sessions, the magistrate being disinclined to decide the issue of insanity. In the other case, the plea of dissociated mind was not supported by the opinion of the senior medical officer of Brixton Prison, where there had been opportunity of observing the accused. The accused had pleaded "guilty" to charges of forgery and false pretences; the suggestion of dual personality was therefore not an attempted defence but an appeal for lessened punishment. Sentence was passed by the Recorder at the Central Criminal Court of three years' penal servitude.

### *Pharmaceutical Society's Prosecution.*

The statutory penalty of £5 (with costs) was imposed last week in the Bow County Court upon a Walthamstow chemist for not having on a specified date conspicuously exhibited on his premises his certificate of registration. An inspector of the Pharmaceutical Society gave evidence of having purchased a disinfectant containing poison at the defendant's shop. The defendant was not on the premises and (as was admitted at a subsequent visit) his certificate was not exhibited. Judge Owen Thompson, K.C., in imposing the penalty, remarked that he had often wondered what was the motive—whether pride or otherwise—which impelled the

display of the Pharmaceutical Society's Certificate. The observation seems to convict the learned judge of judicial ignorance of the Pharmacy Act, 1868, and the Poisons and Pharmacy Act, 1908. Where Parliament prescribes or recognises the grant of professional qualifications by some supervisory body, it is clearly to the public interest that there should be means of knowing whether a practitioner possesses the qualification or not.

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# INTER-STATE POST-GRADUATE ASSEMBLY OF NORTH AMERICA.

## VISIT TO LONDON, MAY 27TH–29TH, 1929.

(*Concluded from p. 1165.*)

THE session of this assembly ended in London on May 29th. In the morning Sir W. ARBUTHNOT LANE, who took the chair, spoke on

### INTESTINAL STASIS.

He said that any laborious occupation pursued for a long time resulted in such definite and characteristic changes in the bones and joints of the body that the labour-history of the subject could easily be identified. Six fundamental laws could be enunciated: (1) The skeleton represented the crystallisation of lines of force. (2) Pressure produced changes in the skeleton, altering the form of bones and joints, destroying normal ones and developing new ones, and changing hyaline cartilage into bone. (3) Strain had the same effect as pressure. (4) When it was of advantage to the individual, an old mechanism might be altered and a new one developed. (5) We bore a simple mechanical relationship to our surroundings, and any change in that relationship had associated with it a corresponding change in anatomy. (6) To this there was the solemn corollary that any change which ensued to meet altered relationships to surroundings tended to shorten life. As a result of formulating these laws, the speaker had started operating on simple fractures and on cleft palate in infants, and the application of the laws to the gastro-intestinal tract had revealed certain remarkable changes. Robust primitive races, living almost entirely on the fruits of the soil and dairy produce, had an action of the bowel after each meal, and this normal functioning excluded the incidence of all the familiar diseases of civilisation. The milk of the civilised mother was usually wanting in necessary components, so that material was delayed in the intestine, and evacuations were infrequent and irregular. In any case the child was soon taught only to have one action a day. In consequence a portion of the large bowel, which for thousands of years had been evolved to contain a quantity of the products of digestion proportionate to the intake, now had to deal with 24 hours' accumulation. To prevent enormous elongation and distension the bowel had become fixed by a series of ligamentous bands in the lines of strain. These were developed early in life, and had been described as congenital. Fixation led to obstruction, and obstruction to inflammation and spasmodic muscular action which further increased the obstruction, which was gradually transmitted back to the cæcum, small intestine, and duodenum, so that the duodenal mucosa was overstretched, bled readily, and ulcerated. To obviate this the pylorus contracted spasmodically, and the stomach became dilated and lost its pumping efficiency. The overloading of the stomach caused ulceration. When ulceration and irritation became chronic, carcinoma frequently supervened. Organisms thrived in the material accumulated in the bowel, and toxic products entered the circulation, causing malnutrition and degeneration of all the tissues of the body, disease, and lower resistance to other organisms. Cancer never affected a healthy organ. Sir Arbuthnot Lane then showed a number of slides illustrating the skeletal changes produced by various occupations, and the "first and last kink" as the cause of all the diseases peculiar to civilisation, more properly called "filth diseases," for they never affected people with a normal drainage system. He thought that the present relationship between doctor and patient was all wrong; the physician should watch his patient regularly, and follow him "from the cradle to the grave."

Dr. DONALD HUNTER spoke on the

### CLINICAL SIGNIFICANCE OF THE SUPRARENAL CORTEX.

He quoted Addison's original paper, describing two important discoveries, "Addison's disease" and "Addisonian anæmia," reviewed the history of research on the suprarenals, and described a number of cases showing the functions of the suprarenal cortex. Tuberculous disease had only been found in 20 out of 28 cases of Addison's disease in the London Hospital during the last 20 years. In eight of them the only lesion had been atrophy of the cortex. The organs included under the "chromaffin system" all belonged to the same system, embryologically, chemically, and physiologically. The medulla of the suprarenal was not essential to life, but only to the emergency mechanism of reaction to danger. Cannon had gradually removed the entire sympathetic system from a cat, and when this animal was confronted with a dog no reaction occurred. The cortex, on the other hand, was essential to life. Accessory suprarenals usually consisted of cortex only. Investigators seemed to be on the verge of discovering the hormone of the cortex: this would probably keep patients of Addison's disease alive. Simple adenomata of the cortex were harmless and symptomless; carcinoma was usually a true hypernephroma giving the signs of renal tumour. Dr. Hunter then recounted cases of sexual precocity associated with tumour of the suprarenal cortex; he said that the condition was commoner in girls, the precocity being of a male type. In one case the growth of secondary deposits had been associated with very marked advance of the sexual precocity.

Mr. DONALD ARMOUR spoke on

### HEAD INJURIES.

He reviewed the anatomical relationships governing the spread of infection and hæmorrhage in the scalp. Were there no emissary veins, infections of the scalp would be much less serious. No wound of the scalp was unimportant; hæmostasis, cleansing, and closure with drainage, under anæsthesia, should be promptly undertaken. No cosmetic consideration should prevent the shaving of a wide area. The site of injury should then be thoroughly scrubbed with a nailbrush, soap and water, and every particle of foreign matter removed, the wound being enlarged if necessary. Careful search for bone injury should be made in a good light. The wound should be dressed daily for the first few days and watch kept for signs of deep infection. If large vessels had been cut, a curved needle should be passed under them, and they could then be secured easily. Any fracture discovered at operation should be followed along its entire length, and the wound should be regarded with suspicion for a few days. If a fissured fracture were found, wider implication of the inner table was probable, especially if blood continued to ooze, and if foreign matter were caught in it. Fractures should not be examined by probe, but opened up with chisel and mallet, the chisel being held almost parallel with the skull, and the inner table investigated. If it were comminuted all fragments must be carefully removed, the dura being cautiously separated. If the dura were torn, a mess of bone fragments, blood-clot, and brain tissue would be found at the bottom of the fracture; it was best cleared up by irrigation or with tiny swabs, used with great caution and delicacy. A bleeding cortical vessel was best tied by passing under it a suture carrying a ligature. Sudden hæmorrhage might follow removal of bone fragments. Oozing from diploic veins was easily stopped with bone wax, or by

crushing the two layers of bone together at the edge. A ruptured meningeal vessel should be underpinned, like a cortical vessel; bleeding at the cut edge of the dura could be stopped by crushing or by ligature. Most difficult of all to stop was bleeding from a torn sinus; sometimes the tear could be closed by suture, or a piece of muscle might be put over it. When the exact site was not ascertainable a gauze plug might have to be used. When the depressed bone could not be removed without injury to the brain because of high cerebral tension, a subtemporal decompression should be performed first. Sometimes a trephine opening would provide access to a depressed piece of bone.

The danger of fracture in a head injury was often exaggerated at the expense of the functional damage done to deeper structures. Thus the importance of "minor" head injuries was under-estimated. Increase in intracranial pressure was the first result, due to œdema or hæmorrhage or both, and might be increased later by blockage, which set up a vicious circle by displacing the midbrain. The pressure was exerted on the blood-vessels and caused focal or general neurological symptoms. "Concussion" was a term with varied interpretations. It was more than a temporary functional disturbance. Post-concussion neurosis was a result of the change, usually a rise in tension. Under violence there was a change of shape, a flattening, which drove out cerebro-spinal fluid. Any fluid that could not get out must pass into the perivascular spaces and this, acting on the ganglionic cells, had been held to account for the phenomena of concussion. French workers had evolved a "formula of concussion" (of cerebro-spinal tension) which they applied even in the absence of any history of injury. The determination of pressure of the fluid was, therefore, of great importance in acute or chronic head injury, and must be made with a manometer. The absence of blood in the fluid did not exclude intracranial hæmorrhage, and had no significance in treatment. Papilloedema or papillary stasis might be produced by increased tension, and ophthalmoscopic observation of dilatation of the retinal arteries and venous stasis was of great value. After six hours of increased tension blurring of the disc appeared, and was more marked in tentorial injuries. The therapeutic value of lumbar puncture was insufficiently appreciated; it often allowed decompression to be postponed until conditions were suitable or obviated it altogether. The pressure and not the quantity withdrawn was the determining factor. Repeated puncture mitigated the distressing symptoms of restlessness, headache, vertigo, and irritability in less serious cases. Intravenous hypertonic solutions were useful for lowering intracranial tension—e.g., 50 c.cm. of 30 per cent. sodium chloride or 100 per cent. dextrose. Half an ounce of saturated magnesium sulphate by the mouth, hourly, or 30 per cent. sodium chloride per rectum might be used. In the intermediate group, between mild and severe injuries, only careful observation could decide whether decompression was advisable or not. No operation whatever should be performed while the patient was in a state of shock, nor should the surgeon intervene in the very severe cases of medullary collapse which could not recover anyhow. The ideal period was the stage of capillary anæmia, shown by slow pulse and slight rise in arterial blood pressure, before increasing headache and delirium indicated venous stasis. The operation was a right subtemporal decompression.

*Corrigendum.*—Dr. H. C. Semon writes that he did not intend to suggest (THE LANCET, June 1st, p. 1164) that in treatment with ultra-violet light "the patient was the best judge of overdosage." His actual words were: "The effects of overdosage are so immediate that the patient himself is the best security against them, and there are no real dangers, *qua* skin such as apply in X ray therapy."

DONCASTER ROYAL INFIRMARY.—The Doncaster Collieries Association has given a second instalment of £10,000 promised towards the cost of the new Doncaster Royal Infirmary.

# GENERAL MEDICAL COUNCIL.

## SUMMER SESSION, 1929.

### PENAL CASES.

TUESDAY, MAY 28TH.

ACCORDING to custom the Council heard the cases in public but deliberated upon them in camera, and the President announced the decisions.

*Reported by the Dental Board.*

*The Case of Harry Patrick Jones*, registered as of 4, Aberford-road, Woodlesford, Yorks, "Dentist, 1921," who had been summoned to appear before the Council as the result of the finding of the Dental Board that his name ought to be erased from the Dentists Register in consequence of his having canvassed for the purpose of procuring patients and of his having employed a canvasser for a similar purpose. The complainants were the Public Dental Service Association. This case had been adjourned from May 28th, 1928, when the respondent had appeared before the Council and judgment had been postponed for twelve months.

The Dental Board reported that Mr. Jones had not attended the inquiry on May 8th of this year, but had sent a letter from Wakefield Prison asking for an adjournment. He had been convicted at the Leeds Assizes commencing on March 4th, 1929, of the following misdemeanour and felony, viz: (1) Of fraudulently converting on Dec. 8th, 1928, at Leeds, a banker's cheque for the sum of £100 entrusted to him for the purchase of shares by Sarah Helen Williamson, and (2) of bigamously marrying Dulcie Mona Morgan on Dec. 22nd, 1928, at Manchester, and had been sentenced to six months' imprisonment in the second division upon each indictment, the sentences to run concurrently.

The Board, therefore, recommended that the respondent's name be erased from the Dental Register. The Council decided that it should be so erased on each of the two counts, for canvassing and for conviction of a felony.

*Adjourned from May, 1928.*

*The Case of Reginald Francis Edmund Austin*, registered as of 41, Wimpole-street, W.1, M.R.C.S.Eng. 1891, L.R.C.P.Lond. 1891, who had appeared before the Council on the following charge:—

"That, being a registered medical practitioner, you have sought to attract to yourself patients and to promote your own professional advantage by means of an article upon appendicitis written by you and published in the number for December, 1927, of the magazine *Health and Efficiency*, in which you extolled your own methods and depreciated those of other practitioners; and that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect."

The complainants were the Medical Defence Union.

After considering a number of testimonials furnished by Dr. Austin, and hearing his own assurances for the future, the Council decided not to erase his name from the Register.

*Charges Concerning Advertisement.*

*The Case of Elizabeth Caroline Mudie*, registered as of 3, Windsor-quadrant, Kelvinside, Glasgow, W., L.R.C.P. Edin. 1925, L.R.C.S. Edin. 1925, L.R.F.P.S. Glasg. 1925, who had been summoned to appear before the Council on the following charge:—

"That, being a registered medical practitioner; (1) you have associated yourself with and/or been employed by a Company, namely, Ultra-Violet Rays (Glasgow), Limited (of which you are also part proprietor), which advertises for the purpose of obtaining patients: (*a*) By means of an advertisement in the *Glasgow Herald* of Jan. 21st, 1929; and (*b*) by means of a printed pamphlet entitled Ancient Sun Worship, indicating and recommending the methods of treatment employed by the said Company; (2) you have acquiesced in the publication of such advertisements for the purpose of obtaining patients to your own professional advantage. And that in relation to the facts so alleged you have been guilty of infamous or disgraceful conduct in a professional respect."

The complainants were the Medical Defence Union.

Dr. Mudie appeared, and was represented by Mr. T. Carthew, counsel.

Mr. Oswald Hempson, in opening the case for the complainants, said that Dr. Mudie had associated herself for her own ends with a company in which she was a large shareholder. The attention of the Medical Defence Union had been called to an advertisement in the *Glasgow Herald*, announcing that the Directors of "Ultra-Violet Rays (Glasgow), Limited," had acquired certain premises which had been fitted up for intensive treatment of disease by ultra-violet ray therapy, and that the whole-time services of an experienced physician had been secured. The Union had ascertained that Dr. Mudie was the physician referred to; that the company had been registered in January of this year and that Dr. Mudie held 350 out of a total of 701 shares. One of the objects of the company, as stated in its memorandum, was "to adopt such means of making known the business of the company as may seem expedient, and in particular by advertising in the press or by circulars." Miss Jessie Watson Gordon, who had consulted the respondent under instructions from the Union's Glasgow agents, had deposed that respondent had said "When I started this company I had to get a name for it, and as it was really ultra-violet rays I could not get a better name." This intimated that Dr. Mudie had been the originator of the company. She could not have been ignorant of the objects for which it was formed, as set out in the memorandum and articles of association, nor of the advertisement in the *Glasgow Herald*. The address of the institute given in the pamphlet on Ancient Sun Worship was that of Dr. Mudie's consulting room, outside which her name appeared. The pamphlet itself was of the type which was got up solely for the attraction of the layman; it suggested an ancient origin for the treatment and covered it with an air of mystery, and gave a list of diseases which the treatment was alleged to cure.

Miss Jessie Gordon testified to her statutory declaration. She was a typist in the employ of the Glasgow agents of the Medical Defence Union, and had written and sent by their instructions a letter saying that she was suffering from debility, that she would like to receive particulars, and that she was prepared to call at the home. An appointment was fixed by a letter written by Dr. Mudie in the third person, and subsequently by telephone with her. When witness went to the address given, she found a brass plate with Dr. Mudie's name and nothing else. A nurse had received her, and had said that Dr. Mudie had telephoned instructions to give witness a sun-bath. Dr. Mudie had then arrived and interviewed the witness, saying she was very much in need of the treatment and that it would make a new girl of her and would do instead of a holiday. She had asked how witness had heard of the company; witness had said she had heard of it from a friend who had had ultra-violet treatment, and gave her the name of a "Miss Gavin." Dr. Mudie had replied that she had had a patient of that name some time ago. Dr. Mudie had then explained the name of the company. She had offered to give witness a letter to her insurance society, saying that if they would not pay she could change her society.

Cross-examined, witness said she had made notes of the conversation on her way home and had drafted the statutory declaration that night. The symptoms she had related to Dr. Mudie were in fact correct, as she had recently had an operation for the removal of tonsils. She maintained that her declaration was a perfectly accurate report.

Dr. Mudie, called on her own behalf, stated that she had been interested in ultra-violet ray therapy since 1912, but had had to work for several years in order to pay for her medical studies. She had qualified in 1925, and had studied the effects of light treatment on the patients she had sent to the hospitals which gave it, but had not been able to afford the apparatus. She had acquired a good nucleus in her first year of practice, but had been badly handicapped by the strike. She had been very desirous of undertaking research in actinotherapy, and had begun to specialise in it. She had met a Mr. Woodside, who had also been interested and had possessed capital, and her solicitor had advised them to form a company. She herself had no business experience, but had consulted the secretary of the Local Panel Committee; he had told her that there could be no objection provided that she was not a director. The company had been incorporated in January of this year. Mr. Woodside was managing director and secretary, and a Mrs. Walker was the other director pro forma, holding only a single share. The company was to acquire apparatus to the value of £350, provided by Mr. Woodside and credited to witness in one-pound shares. She was to receive £500 per annum, and board and lodging, and Mr. Woodside £350 per annum, but they had not drawn any of this. She had never seen the memorandum and articles of association, but had left the arrangements entirely in the hands of her solicitor. She had always had the plate on the door, and had not thought to alter it. A clinic had been started at another address. Mr. Woodside had drawn up and inserted the advertisement in the *Herald* without consulting her. The data for the pamphlet on "Ancient Sun Worship" had been some notes of a lecture she had delivered to a local society. She had not thought there was anything wrong in having it printed and in her consulting-room. Miss Gordon's letter had come to her private address by mistake. She denied having telephoned instructions to give Miss Gordon a sun-bath. The remark about the name of the company attributed to her was an absolute fiction. She had never had a patient named Miss Gavin. No patient, apart from Miss Gordon, had come as a result of the advertisement in the *Glasgow Herald*.

Cross-examined, witness said that she had asked how Miss Gordon had come for treatment, not how she had heard of the company. She did not open letters addressed to the company at the registered office, but Miss Gordon's letter had come to her by accident. She had not noticed that it was addressed to the company. She maintained that she had an accurate recollection of the conversation with Miss Gordon. She denied having discussed the name of the company with Miss Gordon. She had seen the circular in draft and approved of it; it was to be used for the people who had been to the clinic. She did not think there was anything unprofessional about it. She now admitted that her conduct in giving the directors a free hand had been unwise. She had never seen the advertisement until the morning when the warning notice arrived. The matter of profits had never entered her head. Although the articles of association provided for treatment by Mr. Woodside of male patients, and did not stipulate for her personal supervision, she actually supervised all treatments.

In answer to the Legal Assessor, witness said that the object of the company was to relieve her of the business side of the work and enable her to do research in the intervals of practice, but admitted that the expenses had to be derived from the work. She maintained that patients were to have been obtained through the ordinary ethical channels. She had never inquired whether any of the circulars had been posted or left, or whether advertisements had been inserted in the Press. She had never looked at the register of patients, but knew it was used for making accounts with patients and giving receipts. On examining the register she declared that she could account for all the patients shown in it. Mr. Woodside's capital was to have gone to found the new clinic. She had been prepared to wait for her salary until matters improved, and Mr. Woodside had so far not received any of his salary. She had expected to obtain sufficient patients to cover all the outgoings.

In answer to the President, witness admitted that a passage in the circular relating to unqualified practitioners did not come from the notes of her lecture. She again pleaded ignorance of the article

in the memorandum relating to treatment by Mr. Woodside. It was true that the circular might attract patients to go to the witness's house where they would meet witness and nobody else, and that she would then take charge of them. She had taken the Council's letter to Mr. Woodside and he had shown her the proof of the advertisement. She had then expressed her regret that it had been inserted. She had not originated the company, but had acted on the advice of the secretary to the local panel committee, a solicitor. She had not, however, shown him the articles of association. He had said that she could act as medical advisor if she kept off the directorate. She had had nothing to do with the allotment of shares, but had followed the dispositions of her legal adviser. She had thought of nothing but of going on with her work.

Mr. John D. Woodside testified that he had acted as doctor's assistant in two hospitals. He had been anxious to go into practice. He had been introduced to Dr. Mudie, who had told him of her desire to carry out research in ultra-violet therapy and that she needed extra plant. The company was formed with this object. He had carried on the business side of the company, and Dr. Mudie had had nothing to do with this department. He sent out accounts to patients. Some patients, who required only one or two treatments, paid cash, and their names did not appear in the receipt-book. The money he had brought into the company had been devoted to buying apparatus and developing the clinic. The articles of association, when drawn up, had been sent to him and Dr. Mudie had not seen them. The order for the insertion of the advertisement had been given by witness, and Dr. Mudie, as far as he knew, had not been aware of it. He had not told her, as she had nothing to do with the administration side of the business. In answer to the President, witness said that he had known that doctors were liable to limitations, but had not been acquainted with the full regulations. Dr. Mudie had been only the medical advisor, although he admitted that all the profits were derived from her. He had himself prepared the circular, from some notes and a list of treatments supplied by Dr. Mudie.

Cross-examined, Mr. Woodside said that the advertisement had not necessarily been inserted for the purpose of attracting patients, but to announce the formation of the company; he admitted, nevertheless, that he expected some return from it. He had circularised, on his own account, persons who had been patients and who might become patients. Asked whether he had not realised that, from the professional standpoint, he had been doing a very heinous thing in sending out these advertisements, he replied "Yes, and no." He did not suggest that he had any doubts about which he could take advice; he knew that the course was professionally heinous, but had not realised that there was any danger. In answer to the President, he admitted having decided to take the risk without consulting Dr. Mudie. She had given him the list of indications for treatment—mentioned in the circular—at his request; he could not remember whether he had told her that he had required it for this purpose. He admitted to the President that he had prepared the circular with the object of increasing the business of the company.

Examined by the Legal Assessor, he declared that no patients had come in response to the advertisements or circular. He admitted, in answer to a question put from the chair, that the company consisted in practice entirely of himself and Dr. Mudie.

Addressing the Council on behalf of the respondent, Mr. Carthew pointed out that, while technically Dr. Mudie's ignorance of Mr. Woodside's proceedings might not exonerate her, it must necessarily carry much weight. She had taken the precaution of consulting the secretary of the local panel committee and her own solicitor; possibly inadequate precautions, but they had seemed adequate to her. Few women took any interest in articles of association, and when she said she had accepted her solicitor's word that they were suitable she was telling the truth. The advertisements had been issued without her knowledge, and her fault if any had lain in lack of precaution. Her attitude throughout had been "Let me get on with my work, and you look after the business side." This attitude was reflected in the articles of agreement, and in the circular itself. That Dr. Mudie's name still appeared outside the premises where patients of the company were directed to come was a mere oversight. Any fault was a fault of carelessness, and not of deliberate wrongdoing.

Mr. Hempson remarked that there was a degree of blindness and acquiescence which was culpable. Dr. Mudie had known of the warning notices and of the feeling of the profession about advertising. She knew that commercial methods generally included advertising, but had instituted no safeguards of any kind. The fact that no patients had resulted from the advertising was not material to the charge.

The Council found that the facts alleged against the respondent had been proved to their satisfaction, but suspended judgment until their next summer session subject to the usual provisos.

### WEDNESDAY, MAY 29TH.

*The Case of Haydn Brown*, registered as of 53, Bedford-square, London, W.C.1, L.R.C.P. Edin. 1892, L.R.C.S.Edin. 1892, who had been summoned to appear before the Council on the following charge:—

"That, being a registered medical practitioner, you have associated with and/or acquiesced in the publication of announcements in the *Daily Record and Mail* of Glasgow of Jan. 11th, 16th, and 21st, 1929, for the purpose of obtaining patients with a view to promoting your own professional advantage. And that in relation to the facts so alleged you have been guilty of infamous or disgraceful conduct in a professional respect."

The complainants were the Medical Defence Union.

The respondent was represented by Mr. W. Frampton, counsel. Mr. Hempson said that Dr. Brown was not a young man and had had several years' experience of medicine, for he had qualified in 1892. He could not therefore plead ignorance. The case was a peculiarly flagrant one. The attention of the Union had been called to three articles in the *Daily Record* of Glasgow. This journal had been conducting a campaign to interest its readers in the cure of asthma. It had given an account of a dinner held at the Mansion House to inaugurate the Asthma Research Committee, and had published a letter from the four eminent physicians who were sponsoring the committee to the public. Meanwhile, the article ran, a certain cure for asthma had been discovered by a London doctor, who had offered to treat Scottish sufferers free.

The article gave an account of his method, which was known as Autonomous Relaxation. The editor of the *Daily Record* had forwarded to Dr. Brown large numbers of letters from persons in Scotland suffering from asthma. He had treated some of these, and the newspaper had then published enthusiastic accounts from them of the success of the treatment. Dr. Brown had subscribed to a press-cutting agency, and therefore must have known the type of articles which were appearing. A further article contrasted the opinion of the four specialists with the cures that were claimed for the respondent's method. In a subsequent issue, a long article appeared written or authorised by Dr. Brown giving an account of his method and his treatment of the patients with whom the *Daily Record* had put him in touch. The fact that his actual name never appeared did not make his conduct less reprehensible.

Mr. Hempson had instructed his clerk to communicate with Dr. Brown as a patient. A reply was received from the newspaper syndicate in acknowledgement, and subsequently two letters were received from Dr. Brown, making an appointment and informing the applicant that the fee was three guineas. The clerk had attended Dr. Brown's consulting-room, and had received a short treatment, which had not benefited him. The clerk had then written another

letter to the Editor of the *Daily Record*, and had received a reply, obviously in a stock form, beginning, "Dear Sir, or Madam—," saying that the letter had been forwarded to the London doctor, who was desirous of getting a Glasgow doctor to deal with sufferers in Scotland, and that the applicant would hear from this second doctor in due course. The fact that the clerk did not purport to be resident in Scotland showed that the letter was a stock one. Statutory declarations by Dr. James Neal and Mr. F. D. Whitwell, the clerk, were put in.

Mr. Frampton, on behalf of the respondent, said that his client had committed the offence charged. There could be no doubt that he had been associated with or had acquiesced in the publication of two of the articles. The third had been merely a report of the proceedings at the Mansion House, and Dr. Brown could have had nothing to do with it. Nevertheless he, counsel, could not agree with the views of Mr. Hempson. Dr. Brown had devoted a good deal of his time to research work, and believed, rightly or wrongly, that his method was a cure for many maladies. Mr. Frampton asked whether a medical man was not entitled to announce a cure, so long as he did not announce his name with it. The Asthma Research Council had submitted ten cases to him in August of last year, and he had reported in November. The newspaper had published a letter from a patient, recording the result of treatment by "a London doctor," and had asked if there were really a cure for asthma. The newspaper had got into touch with Dr. Brown through a press-cutting agency. He had written enjoining secrecy, and at the request of the editor had treated the inquirer for a fortnight. As a result of the publication of this case 120 persons had written to the editor asking to be put in touch with Dr. Brown. Of these he had treated 23 free of charge. Dr. Brown had perhaps been mistaken in his view that if he withheld his name there could be nothing to identify him with these articles. He had been making arrangements to transfer all the Scottish patients to local practitioners, and had offered to demonstrate his method to any member of the profession. The clerk who had visited him had said that he was prepared to pay, and so a fee had been named.

Mr. Frampton referred to the blunder which had led to the erasure of Dr. Brown's name in 1924 for publishing a signed article in *John Bull*, and gave an undertaking on his behalf to refrain in future from communicating with the lay press.

The Council found the charges proved to their satisfaction, and directed that the name of Dr. Haydn Brown be erased from the Register.

*The Case of William Mulhall Corbet*, registered as William Corbet, of 66, Finsbury Pavement, London, E.C. 2, M.B., B.Ch. 1915, N.U. Irel., who appeared before the Council on the following charge:—

"That, being a registered medical practitioner; (1) you have associated yourself with and/or been employed by The British Institute of Inhalation Therapy, an institution which advertises for the purpose of obtaining patients by means of a printed card describing you as the 'Physician in Charge' and giving the method of treatment and the fees and the hours of treatment; (2) you have acquiesced in such advertising for the purpose of obtaining patients to your own professional advantage. And that in relation to the facts so alleged you have been guilty of infamous or disgraceful conduct in a professional respect."

The complainants were the Medical Defence Union.

Dr. Corbet appeared in answer to his notice, accompanied by Mr. B. M. Cloutman, counsel.

In opening the case, Mr. Hempson said that the respondent was physician in charge of the Institute. On Dec. 19th, 1928, Mr. S. Coulson, a clerk in the employment of the British Medical Association, had received a printed card headed "British Institute of Inhalation Therapy; Physician in Charge, Dr. William Mulhall Corbet." The work of the Institute and the treatment were described, and a scale of fees set out. A covering letter stated that Mr. Coulson had made inquiries about the Institute in 1924. The wording of the card showed that it was not merely sent out to persons who were patients of the Institute and who had made inquiries, or there would be no need for the detailed information it contained. It was not within the bounds of professional propriety to "follow up" inquiries in this way. Mr. Hempson had instructed his clerk, Miss E. I. Ash, to write a letter drafted by himself to Dr. Corbet; in it she had represented that she was contemplating a course of treatment but wished to know what the fees were, as the question of expense was important. The respondent, in reply, had not inquired how she had come to hear of the Institute; he had treated it as a normal inquiry from a person who had received a circular. He had stated that the usual fee was three guineas for a first consultation and two or one for subsequent visits. No clearer case of a medical man attracting patients by means of circulars had ever come before the Council. It was reprehensible that a person who, four years before Dr. Corbet had been associated with the Institute, had been a mere inquirer, should be put on a list and systematically followed up with persuasions to undergo treatment.

Miss Ash's statutory declaration was put in, Mr. Cloutman offering no objection.

Dr. James Neal testified to his statutory declaration, and based his case entirely upon the card received by Mr. Coulson. He considered the card an absolute advertisement to attract the lay public. The President ruled out of order questions put by Mr. Cloutman to extract witness's opinion of methods employed by other institutions. Witness said that the name on the card was that of a doctor who had had nothing whatever to do with Mr. Coulson. He had made no inquiries as to the conduct of this particular Institute. Re-examined, he stated that it was not usual to state fees on any notification, and that he himself would not have regarded an inquirer such as Mr. Coulson was alleged to be as his patient.

Mr. S. Coulson testified to his receipt of the card, which had been left at his house like an ordinary advertisement. He had made no inquiries either in 1924 or at any other time, and had not invited the notification in any way. Confronted with the record card of the Institute, which bore his name and address and a reference number, with notes suggesting that a series of letters had been sent to him, he stated that he had never received a communication from the Institute before.

Dr. Corbet, giving evidence on his own behalf, stated that he had first heard of the Institute four years before at a medical dinner, and had soon afterwards visited it and became interested in its work. He had installed inhalation apparatus in his own surgery. In 1927, when he was considering a closer association with the Institute, he had visited the Registrar of the Council together with one of the directors, Mr. Douglas Hamilton, who had financed the company and had spent £16,000 to £20,000 on it, but had not profited by it. He had later made enquiries about the professional conduct of the Institute, which he had ascertained to be entirely satisfactory. It was not conducted for profits, and he had never seen any advertisements of it in the lay press. In April, 1928, he had succeeded the German physician in charge at £1400 per annum. The agreement had been a purely verbal one. He had also been appointed a director. In reply to a question by the Legal Assessor, he said that he did not know whether the Institute was a limited company, or whether it had any articles of association. He had been given one hundred shilling shares as a qualification, and had never made a profit; his holding was merely a question of status. He had desired to be a director to be able to keep an eye on the medical proceedings. The other members were Mr. Douglas Hamilton, Mr. Gavin Hamilton, and Major W. E. Collison. As a result of a decision to appoint an English physician and reduce the fees, this card had been prepared for circulation to patients and inquirers. He admitted to the President that the name of the new physician in charge was the only indication of the change. Twenty-five per cent. of the patients were treated free. Witness had had the

card submitted to him before it was issued and had approved it, as he had seen the brochures issued by other firms and saw nothing objectionable in it. He had nothing to do with the card index, though he had seen it since this inquiry had begun. No distinction had been made between different classes of inquirers and patients. 60 to 70 per cent. had been introduced by their ordinary medical advisers; 217 doctors were associated in various ways with the Institute. Most of the remainder came into touch through personal recommendation. All patients were treated under the witness's own supervision. One of his objects in joining the Institute had been to spread knowledge of the treatment inside the profession. There was a society with a journal. There was a separate company for supplying drugs and apparatus with which witness had nothing whatever to do; it had been housed elsewhere at his insistent request. In answer to the President, he admitted that the two concerns had some common members. If the Council considered after inquiry that he ought to sever his connexion with the Institute, he would do so at once. He had, in fact, already tendered his resignation, but it had not been accepted, since the chief director had not yet returned from abroad.

In reply to cross-examination, the witness maintained that he saw nothing wrong in sending out the cards, in so far as they had been sent to patients and inquirers. He would not have sanctioned the issue of cards to such ancient inquirers as Mr. Coulson. The sending of Mr. Coulson's card had, he admitted, been improper. It had not occurred to him to admit this in his reply to the Council's warning notice. It had been on this account that he had tendered his resignation. He could not explain the presence of several cards in the index with no entries on them but addresses and numbers. When an inquiry came in, a card was made out with the name and address and filed away; any answers were recorded on the appropriate card. He did not, however, keep this index. No stereotyped letters were ever sent out. Asked why, if the cards had been intended for patients and inquirers, the points of the change of staff and reduction of fees had not been stressed, and why it should be necessary to include details such as the date of foundation, he replied that he had not gone into these questions when the cards had been produced. The only question raised had been whether it was right to send them out, and he had glanced through the draft and said "Yes." He had always understood that it was in order to notify private patients of change of address or the acquisition of a practice, but not to give the fees or describe the treatment. He did not regard an inquirer as a patient, or entitled to notification of change of practice. Many physicians in charge of reputable institutes sent new particulars to former inquirers; he was not in a position to say whether or not this was proper. He agreed that it had been improper to send the card to Mr. Coulson, but could draw no time limit after which an inquirer became "ancient." He had not realised the risk of cards going out broadcast; this would have been grossly unprofessional. He was not a business man, and it had never come to his notice that the Institute's articles allowed it large powers of advertising. The Institute made no profits and probably never would; it had been started from philanthropic motives. The object of such publicity as there had been was to establish the venture inside the profession and if possible to make it self-supporting. Publicity to the Institute could, of course, hardly help benefiting the company providing apparatus.

He had thought Miss Ash's inquiry a perfectly genuine one and had not remarked that she had not given the name of anyone as recommending the Institute to her. It was not always done. It had never occurred to him that she had received the notification from an improper source; it might well have reached her from a doctor. The safeguards against advertising had been the verbal undertakings of the other directors when he had joined the Institute. He had not inquired into what had happened before he had joined. He had, however, not had his stipulation recorded in the minutes. Apparently the precautions he had taken had not been sufficient in the case of Mr. Coulson, but the error might have been avoided with a little vigilance. In answer to the President, he said that the company had lost something under £2000 in the last completed year. Mr. Hamilton had neither made any profits nor done anything but put money in. Major Collison only countersigned cheques. To the Legal Assessor, he admitted never having taken pains to ascertain the objects of the company of which he was a director, or whether it was registered. Questioned on items of £1600 and £499 for development expenses in the balance-sheet, he said they must have been expended on legitimate advertising, but did not know what form that took.

The Legal Assessor read an extract from the memorandum of the company mentioning as one of its objects—

"To adopt such means of making known the products of the company as may seem expedient, and in particular by advertising in the press, by circulars, by purchase and exhibition of works of art or interest, by publication of books and periodicals, and by giving prizes, awards and donations."

The witness observed that if he had known of this he would never have sanctioned it. He had refrained from inquiry because of his complete confidence in his fellow directors. The concern had been incorporated as a limited company to limit Mr. Hamilton's liability.

Major W. E. Collison testified that no advertising had been done in other than medical journals. The treatment had been invented in Germany, and the physician in charge had been a German. The index cards, of which Mr. Coulson's had been one, had been taken over when the present company had been formed. They had never been used before the reorganisation, and there had been no follow-up system. When the fees had been reduced, Dr. Corbet had instructed the clerk to send out notices to inquirers.

Cross-examined, he was uncertain whether respondent or himself had given those instructions. One to two thousand cards had been issued. A certain amount of advertising and circularising had been done in the days of the German physician.

The Council found the charges proved to their satisfaction, but postponed judgment for a year, subject to the usual provisos.

### THURSDAY, MAY 30TH.

#### *Alleged Canvassing for Patients.*

*The Case of Jacob Lenten*, registered as of 124, Station-road, Hadfield, Manchester, L., L.M. 1926, R.C.P.Irel., L., L.M. 1926, R.C.S. Irel., who appeared before the Council on the following charge:—

"That, being a registered medical practitioner, you have canvassed for the purpose of procuring patients for yourself, and in particular (1) in or about December, 1928, canvassed one, James Henry Taylor, and (2) in or about December, 1928, canvassed one, John Robinson, panel patients of the late Andrew Paterson Walker for whom you had acted as locum tenens. And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect."

The complainants were Mrs. Walker and Mr. J. W. Struthers, M.B. They were represented by Mr. H. E. Kingdon, counsel, and the respondent was accompanied by Mr. J. Lustgarten, counsel.

In opening the case, Mr. Kingdon related that on Nov. 7th, 1928, the respondent had acted as locum tenens to Dr. Andrew Walker. Dr. Walker had died on Nov. 23rd, and the respondent had continued to act at the request of Mrs. Walker. The practice had not been sold to him, but to Dr. Struthers, and the solicitors of the late Dr. Walker had written to respondent asking him to introduce the new-comer to the patients. Not only had Dr. Lenten refused to do this, but he had left behind him no list of patients on the day-book, and had marked no appointments for dates after Dec. 15th, with one exception. The respondent's statutory declaration contained a significant observation: "I believed that Mrs. Walker and her solicitors really intended to sell the practice to me, and consequently I had no

occasion to canvass." The declaration went on to say that Dr. Lenten had got accustomed to the idea of taking on the practice, but when he had heard that it had been sold to someone else he had thought of setting up on his own. On the contrary, the occasions of canvassing had all been after the date when he knew the practice had been disposed of. Counsel was not able to call Robinson, who was seriously ill, and his statutory declaration was read. Counsel stated that, not being familiar with the Council's procedure, he had failed to obtain declarations in the proper form from a number of other witnesses; Mrs. Walker was undergoing an operation and could not attend. The declaration of John Taylor was put in and attested by the defendant who said that the respondent had attended him as Dr. Walker's locum tenens. On Dec. 15th, the last time he had called, respondent had said: "This is my last visit: if you want to go on with me you must bring your card down to Station-road, where I am going to start next week." Witness had replied: "It would be as well to let people please themselves." He had been coachman to Dr. Walker's predecessor and had been in the habit of visiting Dr. Walker's house frequently. Dr. Lenten had said several times that the practice was being sold to him. Cross-examined, witness stated that Dr. Lenten's acquisition of a house in the neighbourhood had been common knowledge.

Dr. J. W. Struthers said that he had agreed to take over Dr. Walker's practice as from the first of January. On Dec. 16th he had gone to the surgery to look for a list of patients and had found one marked up to the 15th, and only one appointment beyond that, an old lady who had died within three days of his arrival. He had arranged to call on 12 patients whom the chauffeur had told him were being attended. The first one had said Dr. Lenten was in attendance. He had said nothing, but the second had said the same thing. He had asked the chauffeur who Dr. Lenten was and had made further inquiries; he had then learned that respondent was intending to start in the district on his own. He had been told by all but two of the remaining patients that Dr. Lenten was in attendance. He produced 271 panel cards, of which 251 had been transferred to Dr. Lenten from Jan. 11th. The remaining 20 had ceased to be insured or had transferred to other local practitioners.

The Legal Assessor read the official figures from the local panel committee, showing that the actual number transferred to Dr. Lenten was considerably larger. Witness said he had not known that Dr. Lenten had been locum tenens until the solicitors had informed him that they had asked respondent to introduce Dr. Struthers and he had refused. In answer to the Legal Assessor, witness stated that only 12 out of 54 patients on the visiting list were now his patients, the remainder were Dr. Lenten's.

Dr. Lenten, giving evidence on his own behalf, stated that when he had taken the position of locum tenens it had not been contemplated that Dr. Walker might die, and the appointment had been fixed to end on Nov. 23rd. When Dr. Walker had died Mrs. Walker had asked witness to continue for a time. Within a day or two she had discussed the sale of the practice with him and asked him if he would like to buy it. He had said he would. She had arranged for him to meet her solicitors' managing clerk, with whom witness had reached an understanding that he was to take over the practice at a year's purchase, the exact figure to be agreed upon. The clerk had mentioned that Mrs. Walker would like to sell the house with the practice. Witness had been taken unawares, and had replied that at the moment he was not prepared to buy the house, but would rent it at an agreed figure with option of purchase later. The same morning the clerk had told witness that Mrs. Walker could not quite make up her mind, but that he should have the first refusal. Witness had been anxious to buy the practice and would have bought the house as well. From that day he had never heard any more until he had received a letter, on the morning of Dec. 12th, advising him that a Dr. Struthers had purchased the practice, and suggesting that he should take Dr. Struthers round and introduce him. Witness had not refused to do that; Dr. Struthers had never presented himself. Some days after the 12th, witness had looked for a house in Hadfield and had taken one in Station-road and put up a card. Taylor had spoken to witness soon after Dr. Walker's death—mainly about old times—and had asked if he was taking over the practice. Dr. Lenten had replied that, as far as he knew, he was, and Taylor had said that he hoped so. That had been before the 15th. He had never at any time asked for patients to be transferred to him.

Cross-examined, he maintained that Taylor had not replied as he claimed to have, but he could not suggest a reason why Taylor and Robinson should tell lies against him. He had not left a list because it was kept in the day-books. He had taken a shop in Station-road with the same number, 124, as Dr. Walker's house.

In answer to the Legal Assessor, who asked whether, during the 39 days he had been in charge, he had visited all Dr. Walker's panel patients, he said he had not, but that he had seen all the patients in the day-book. Asked if he could explain why 250 out of 960 patients in the Derby area should have transferred to him, he said that some of them knew him, but he had not seen them all during the time of his appointment. Those he had not seen had mainly been friends of those he had. The same applied to the 100 who had transferred to him out of the 230 on the Cheshire roll. 34 of the patients on the day-book were now his patients.

The President: Have you any suggestion to offer in explanation of this remarkable turn-over?—Dr. Lenten: Most of them knew me.

The President: They got to know you in the 39 days?—Yes.

Witness said, in answer to questions put through the chair, that when patients came to him he did not ask what doctor they had come from. He had not settled there in the hope of this happening.

The Council found that the charges had not been proved to their satisfaction.

*Restoration.*

The Council directed the restoration to the Register of the name of William Lovell, L.S.A. 1903, M.R.C.S., L.R.C.P. 1907.

EXECUTIVE COMMITTEE.

At the usual meeting of the Executive Committee preceding the sitting of the full Council a number of questions relating to medical reciprocity came up for discussion.

*British Practitioners in the United States.*

The Privy Council had transmitted a communication from H.M. Ambassador at Washington, concerning a British subject who desired to practise medicine in the State of Nebraska. Apparently the Nebraska Statute provides that only those persons may practise medicine who pass certain tests of fitness and are citizens of the United States. The Ambassador stated that the validity of this enactment was being questioned, since the Fourteenth Amendment of the Constitution of the United States guarantees the equal protection of the laws, and the Supreme Court has held that this protection applies also to aliens. The Council's reply stated that the requirement of nationalisation had not been mentioned in the information recently obtained by them about the legal position of persons qualified in their own country who desired to practise in that State; they would be greatly interested to know the result of the question which had been raised concerning the validity of the Nebraska legislation. There is no medical reciprocity between this country and the United States. No central authority exists in the States which has power to licence persons to practise medicine all over the country, and it is not possible to arrange reciprocity

with individual States. To do this would require fresh legislation in this country, similar to the Medical Act (1886), Amendment Act, 1905, which made it possible to arrange reciprocity with individual Provinces in Canada. Some 13 of the United States require all practitioners to be naturalised, and a decision against the validity of this provision in Nebraska would presumably hold good against these States as well. Nevertheless, there is no near prospect of British practitioners in the United States obtaining the same facilities as those available in other countries.

*Royal College of Physicians and Surgeons of Canada.*

The Executive Committee received from the Dominions Office a copy of the Act of the House of Commons of Canada by which this College was recently incorporated. The Act was passed in response to a petition from the Canadian Medical Association. The College consists of all those who, when the Act came into force, were professors of medicine, surgery, gynæcology or obstetrics in a Canadian University. A Provisional Council is to be convened, within six months of the passing of the Act, by the General Secretary of the Canadian Medical Association. This will consist of all persons present who are entitled to become Fellows of the College, and their duty will be to elect a Council of Officers for four years. The Council may, during the first two years, admit as Fellows without examination any duly qualified persons resident in Canada who have given evidence of high ability in medicine. They may also admit at any time, without examination, persons practising in Canada who possess a diploma or fellowship equal to those of the College, and may make such honorary Fellows as they think fit. Candidates for examination must be licensed to practise in a Canadian Province, and must have been qualified three years. The College is allowed to hold real estate to the annual value of fifty thousand dollars.

*Qualification of Foreign Graduates.*

The South African Medical Council had written to the General Council asking for reassurance that no licensing body in this country admitted a foreign medical graduate to its final examinations until he had undergone education and training equivalent to that required within the Union. (A British qualification entitles its holder to registration in most parts of the Dominions, including South Africa.) In its reply the Executive Committee stated that the Council had no direct power to make rules governing the training and examination of students. If their resolutions and recommendations were not adopted by the licensing bodies, they could only make representations to the Privy Council; without special authorisation from the Privy Council, they could not refuse to register a qualification. Licensing bodies had full power to recognise training and examinations undergone in the Dominions and foreign countries. The Council, moreover, pointed out that in recognising qualifications obtained in the Dominions—e.g., in South Africa—they had no powers of visitation or inspection, and granted recognition solely on documentary evidence. In these circumstances, there was no need for the South African Medical Council to apprehend that any students would be qualified without course of study and examination equivalent to that required in this country.

A SANATORIUM IN THE ISLE OF MAN.—A tuberculosis sanatorium is to be established in the Isle of Man in a building erected about 30 years ago by the Ramsey Corporation which was formerly used as a hospital for infectious diseases.

CONGLETON WAR MEMORIAL HOSPITAL.—Lord Moynihan recently opened an extension of this hospital which includes three emergency wards and accommodation for the staff. He is reported as saying he had never seen a hospital better fitted for its work, so well planned and furnished, or in such perfect surroundings.

# LOCAL GOVERNMENT REFORM AND VOLUNTARY HOSPITALS IN SCOTLAND.

DISCUSSION AT ROYAL MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.

THE President of this Society, DR. JOSHUA FERGUSON, took the chair at the annual general meeting held on May 3rd, when an address was given by DR. J. PARLANE KINLOCH on the Effect of Local Government Reform on the Voluntary Hospitals in Scotland. He said that at the present time the whole medical organisation of the country was in a state of transition. His department was attempting to formulate a comprehensive scheme, and in doing so it was taking steps to consult with the medical profession in the four great centres of Scotland. Any opinions which he might express were not to be taken as final, or as having Government sanction. With regard to finance, the whole position with regard to expenditure on health services had been reviewed in 1926 by the Royal Commission on National Health Insurance. We were now spending so much on these services as compared with our trade competitors that there was no case for increasing the contributions by employers, workers, or the Treasury until the whole health administration of Britain had been overhauled.

*Coöperation between Statutory and Voluntary Hospitals.*

With regard to the hospitals, three types of institution had to be considered: (1) the great voluntary hospitals; (2) the public health hospitals; (3) the poor-law hospitals. Accepting the view of the Insurance Commissioners that the health services of the country must be reorganised within the existing financial commitment of the Treasury, it followed that the voluntary hospitals must be maintained at their present level and, if possible, expanded. The Government contribution could then be used to fill up gaps in the existing hospital service and to round off the hospital system. It had been decided that the poor-law hospital system should be reformed, since, except in a few areas, the system was inferior in quality; and these hospitals must be brought up to a higher level all over Scotland. The reconditioning and reequipment of poor-law hospitals, and the change in their conditions of administration would be effected with the cöoperation of the voluntary hospitals, whose position would be safeguarded.

The Local Government Act laid it down that the local authority must submit, and have approved, a complete health scheme for its area, including child welfare, antenatal, and maternity services, medical inspection of school-children and of children of pre-school age, the prevention and treatment of infectious diseases, including tuberculosis and venereal diseases, and the treatment of general diseases in the reconditioned poor-law hospitals. These services would be augmented in certain directions. For example, it was proposed to provide medical treatment for school-children. To deal with these requirements they might increase the number of whole-time medical officers, or incorporate the practitioners within the public health service. The former was a bad solution in Dr. Kinloch's opinion, and he strongly urged the importance of bringing the practitioners into the scheme. If this was to be attained there must be organised action by the medical profession itself.

The National Health Insurance service had not been properly correlated so far with the public health services, but the administration of both services had now been centralised in the new Scottish Health Department. Extension of medical benefit to dependents was recognised as desirable, but there was available for such a purpose a sum of only 5 million pounds per annum. To carry out the scheme properly it would require 12 millions per annum.

It was proposed, therefore, to apply the whole of the funds at present available to the provision of a general practitioner service, while the whole cost of specialist services would fall to be met by the local authorities. The relation of this scheme to the voluntary hospitals and the medical teaching schools must be such that the medical schools embraced the whole. The teaching of medicine must be developed more on the preventive side. There had been some progress in this direction in connexion with the teaching of midwifery. There should be no difficulty about developing medical education along these lines, but there must be no hard-and-fast rules to prevent research work from being carried on in the statutory hospitals. The medical curriculum must be modified in some way.

*The Staffing of Statutory Hospitals.*

It was important to prevent competition between the voluntary and the statutory hospitals. They must have the same staffs for both. He suggested that members of the visiting staffs of the voluntary hospitals should be ex officiis consultants within the statutory hospitals and that the routine consultant work in the statutory hospitals should be undertaken by the assistants from the voluntary hospitals' staffs, acting under the supervision of their own chiefs as consultants. There was not enough money to pay a big staff of specialists. For this reason it was not proposed to interfere with the present status and privileges of the "chiefs" in voluntary hospitals. At present they had a certain say in the admission of patients and so forth, and it was now proposed to continue this privilege with certain modifications. By a system of allocation of cases the voluntary hospitals would be kept full, the superintendents and the medical officer of health reviewing the waiting list from day to day. The normal mode of admission of patients would be from the central waiting list, but if any particular case was wanted by a surgeon it would go to his wards, and would not appear on the general list. There would thus be a new organisation from the centre outwards.

The present referee system must be replaced by one in which local referees were increasingly employed and the regional referees were connected with the consulting teams in the various hospitals. These regional referees would act as a link between the medical officer of health and the voluntary and statutory hospitals on the one hand, and the general practitioners on the other hand. It was essential to put a stop to the present excessive medical certification of disablement. This would be possible only when there was an adequate consulting service.

There were three important sections in the new Bill relating to hospitals: (*a*) Section 14, giving power to transfer poor-law hospitals to the public health hospital service; (*b*) Sections 27 and 28, the vital hospital clauses; and (*c*) Section 65, requiring a definite standard of efficiency in the hospital service.

*Expansion of the Medical Schools.*

The larger public health areas defined by the Local Government Act would permit of more efficient health services within each of these areas, but the most important aim was to have the health services of these new and enlarged local authority areas orientated towards the medical schools. In other words, the whole tendency was to evolve a regional hospital and medical service scheme out of the new local authority medical service scheme. For this purpose Scotland naturally fell into four main areas supplying the four medical teaching schools. From the point of view of the Central Department of Health such a regional system was in process of being developed in connexion with the National Health Insurance service.

So far as the medical teaching schools were concerned it would be an easy matter to undertake that the teaching hospitals were supplied with a suitable admixture of cases. If, however, this were regarded as the solution of the teaching problem, then the medical schools must be content to be miniature medical schools. The real solution of the problem was for the medical schools to expand and embrace the statutory hospitals of their areas. Under such an arrangement and without interference with the management of the voluntary and statutory hospitals, the teachers in the teaching hospitals would have access for teaching purposes to the statutory hospitals and their assistants would largely be employed in providing the actual specialist medical and surgical services required by the local authority hospitals. Under such an arrangement there would be a copartnership of the university authorities, the authorities of the voluntary hospitals, and the authorities of the statutory hospitals.

*Discussion.*

Dr. A. S. M. MACGREGOR thought that it would be long before all the contemplated schemes came into operation. There must be gradual progress and evolution. In his opinion no proper scheme of medical treatment could be made without extension of benefits to the dependents of insured persons. He agreed with Dr. Kinloch that the interests of the voluntary hospitals as medical training schools must be paramount. The great benefit of the new proposals was that they removed the poor-law system and opened up a whole field of disease to be dealt with in an organised way.

Prof. E. P. CATHCART spoke of the difficulty of altering the medical curriculum as at present constituted; he did not think it possible to do so without lengthening it.

Prof. J. H. TEACHER expressed his hearty sympathy with Dr. Kinloch's proposals to improve the facilities for teaching. He pointed out that in Glasgow, at least, an important reform of the curriculum in harmony with the views of Dr. Kinloch was already in force—namely, the scheme which had been initiated by Prof. Munro Kerr in connexion with the teaching of midwifery. The scheme would economise the student's time and would emphasise the preventive side of medicine.

Dr. J. B. MILLER considered that the proposals outlined by Dr. Kinloch were a charter for the general practitioner of the future. The National Health Insurance Act was ostensibly an effort to raise the health of the people, and the bringing in of dependents was a necessary development of this idea.

Dr. J. FERGUSON SMITH said that an important part of the work of the voluntary hospitals was done in the out-patient departments, and that no scheme which failed to realise this was likely to be satisfactory. He asked what provision was to be made for the support of the younger consultants. There were already probably twice as many men and women required to do the work of the hospitals as could make a reasonable living from the practice of their specialties, and if the new statutory hospitals drew off any appreciable fraction of those who now obtained special treatment in private, the position would be aggravated.

Dr. JOSHUA FERGUSON and Dr. JAMES TODD also took part in the discussion.

*Reply.*

Dr. KINLOCH said that he must remind them that the extension of medical benefit to dependents was still in the future. If funds were diverted to specialist service there would be nothing available for the provision of benefits for dependents. This was the reason for bringing in the local authority. He wished to make clear the intention that the voluntary hospitals should control their own affairs and that the statutory hospitals should be managed by the local authority. The consultants would remain in the same relation to the voluntary hospitals as at present, and would, in addition, join the staffs of the statutory hospitals, where they would be working under the conditions existing in those hospitals.

## BERLIN.

(FROM OUR OWN CORRESPONDENT.)

*Consumption of Sea Fish.*

THE amount of fish eaten in Germany is small, the average quantity consumed being 17 lb. per head per annum, as compared with 50 lb. in England, whereas the consumption of meat is about the same in the two countries. The Minister of Food lately took the chair at a meeting in Berlin, intended to popularise sea fish as part of the diet. A member of his Ministry said that the transport of fish from the shore to the kitchen is organised under the best hygienic conditions, and that the German fishing fleet is prepared to meet all demands. The kinds of fish principally found in German waters are rich in lipoids, cholesterol, lecithin, and vitamins. Calcareous substances, phosphorus, iron, and iodine are present in them too, and it has been observed that the incidence of goitre increases with distance from the sea. Fish is easily digestible and this applies also to dried fish, which are rather liked in Germany. There are no fish diseases which may prejudice the health of the consumer, and fish cannot be dispensed with in the diet of convalescents, or of patients suffering from gastro-intestinal diseases, gout, diabetes, and nervous affections. It is a pity therefore that the consumption of fish is not yet as general in Germany as in other countries.

*Anthrax from Goat-hair.*

Six of the workers in a brush factory some time ago developed anthrax, five of them dying from the infection, which was traced to goat-hair imported from China. The manager of the factory was prosecuted for manslaughter through negligence, because he had allowed the hair to be handled though he had been informed by the importer that it had not yet been disinfected. The district court gave a verdict of not guilty, in view of medical evidence that disinfection was not an absolutely reliable protection against anthrax. On appeal, however, the High Court quashed the verdict and sentenced the man to six months' imprisonment. This court held that the defendant had acted with gross negligence, since disinfection would have destroyed most of the bacilli.

*Statistics of the Medical Profession.*

This year's statistics show that the number of members of the medical profession residing in Germany, the Saar District, and the City of Danzig is 48,507, of whom 2376 are women. Twenty-eight per cent. of the profession describe themselves as specialists, showing an increase of 7 per cent. over the corresponding figure last year, whilst the number of medical men and women in general has increased by 2·5 per cent. On an average there are 12·4 medical men to each 10,000 of the population in the large cities as against 5·5 in the smaller towns and in country districts. The number of medical women has increased by 25·6 per cent., the majority of the additions being to the ranks of the specialists in diseases of children. 1535 medical men and 149 medical women are under 25 years old; 768 medical men but only 5 medical women are over 70, women having been admitted to qualification only for the last 30 years.

*Radium Treatment of Exophthalmic Goitre.*

Prof. Gudzent, of Berlin, describes the results of radium treatment of exophthalmic goitre. A dose of 100 mg. of radium-element is applied in 6 tubes for 24 hours and the treatment is sometimes repeated after ten weeks' interval. In 83 per cent. of the cases the goitre was reduced. The thyrotoxic symptoms disappeared in as many as 94 per cent. The disease responds rather slowly; toxic symptoms disappear first, the patients regain their sleep, and become less nervous; later, tachycardia, exophthalmia and finally the hypertrophy of the thyroid gland are diminished. Prof. Gudzent believes that thyrotoxicosis is curable by means of radium and that only in cases where this method has proved useless should an operation be performed. In ordinary cases of goitre he holds operation to be indicated.

*Contributions under the Insurance Act.*

According to recent statistics a workman earning 1750 M. a year has to pay 9·01 per cent. of his wages for health insurance. If he earns 2500 M. his contribution amounts to 8·3 per cent. It must be noted, moreover, that the employer has to pay a third of the health insurance and the whole of the accident insurance policy of his employees. Employees who are not workmen earning 1800 M. pay 8·8 per cent. of their salaries; those earning 3000 M. pay 8·3 per cent., and those earning 3600 M. 8·2 per cent. Persons with a small income have thus to pay more in proportion than those with a higher one.

## NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENT.)

*An Eastern Bureau of Health.*

THE international aspects of disease in relation to quarantine were discussed in the Section of State Medicine of the recent Calcutta Congress, and the printed report is now available. The Public Health Commissioner for India recounts the systematic attempt now being made to coördinate international information of disease, and explains how some of the functions of the health section of the League of Nations, created in 1923, have come to overlap those of the original International Bureau at Paris, which has been in existence since 1907. A progressive extension has been made possible by successive grants from the Rockefeller Foundation, and one of the most outstanding events has been the establishment four years ago of an Intelligence Bureau at Singapore. The February meeting of the advisory council was attended by delegates from the Dutch East Indies, various British colonies and dependencies, China, French Indo-China, Japan, the Japanese colonies, Siam, and British India. Information of the occurrence of infectious diseases in the major ports is cabled weekly, on a fixed day, by each country to Singapore, where it is collated and broadcast in code for the benefit of the several Asiatic administrations. India picks up the broadcast at the Himalayan wireless station near Simla, and the public health department sends it on to the chief Indian ports, while abbreviated messages are also re-broadcast for the information of shipping in the Arabian Sea and Indian Ocean. In the same way the details are received by the other countries concerned, so that each has exact information every Friday regarding the state of infectious diseases in the principal ports of Asia to the number of 150. Appropriate measures can thus be taken against arrivals from infected ports. The increasing interest of the health organisation of the League of Nations in international hygiene is shown by the arrangements now in progress for the Malaria Commission of the League to visit India in the coming autumn.

*Osteomalacia in India.*

In the section of gynæcology at the same Congress, Dr. A. C. Scott, of the Women's Medical Service, speaking about osteomalacia in India, remarked that in her experience the disease was very prevalent, and estimated that in the areas most affected it accounts for more than 17 per cent. of the fatal cases of abnormal midwifery which come to women's hospitals. She considered that the chief causes were damp, dark dwellings, lack of sunlight, a deficiency of vitamin A in the diet, and bad hygiene in general; it followed that the disease was preventable. Dr. Scott's inquiry showed that the distribution of osteomalacia is very irregular, Kashmir and the Bombay presidency

furnishing a large proportion of the cases, while the Madras presidency and the eastern part of the peninsula are almost free. One observer stated that in a series of 40,000 deliveries in Southern India, during 15 years, not a single case of osteomalacia had been noticed. The purdah system is markedly associated with the disease, and it is more frequent in towns than in the country. True osteomalacia appears to be unknown amongst males. Of 83 cases Dr. Scott had examined personally the average age of marriage was 13·2 years, and the mean number of pregnancies was 3·8. With regard to diet, it appears that the disease occurs amongst both Mohammedans, who generally take meat, and Hindus, a large proportion of whom do not. The rice-eating population are said to be for the most part immune, but this is probably a coincidence, as Kashmir, where rice is the staple food, reports large numbers of cases. An interesting analogy was drawn between the causative relation of osteomalacia to the purdah system in India, and its association with the custom of foot-binding in China, where the disease is also very prevalent locally; the effect of foot-binding being to cripple women and confine them to the house. In the discussion stress was laid by several speakers on the desirability of concentrating on prevention rather than cure, though it was stated that in the early stages good results might be expected from exposure to daylight and better hygienic conditions, together with cod-liver oil and radiated cholesterol.

*Litholapaxy.*

The treatment of stone in the bladder has been for so long a standing dish of Indian surgery that the subject is in danger of getting a little stale. It was needful, however, for the Calcutta Congress to take cognisance of the recent tendency, both in Europe and America, to substitute suprapubic lithotomy for litholapaxy. Whatever may be the position in England litholapaxy remains the operation of choice for the majority of cases of vesical calculus in India. Most of the surgeons who are destined to practise in the East are trained in British medical schools and hospitals, and some alarm was expressed in the Congress at a statement in a well-known text-book to the effect that litholapaxy is not now in general use, and at its replacement by cutting operations in many British and American hospitals. In Indian hospitals, where large numbers of operations for stone have to be performed annually, there is much to be said for crushing rather than cutting for most of the cases. It was urged that the dangers of crushing had been needlessly exaggerated, and that litholapaxy presented important advantages over the cutting operations in leaving no wound and in shortening convalescence, and that recurrence was not unduly frequent after litholapaxy when properly carried out. A considerable number of surgeons took part in the discussion, and the general trend of opinion was in this direction.

# Obituary.

## ROBERT WELSH BRANTHWAITE, C.B., M.D. BRUX., D.P.H.

WE regret to announce the death of Dr. R. W. Branthwaite, which occurred on Sunday, June 2nd, at Clifton, where he had resided since his retirement from the Board of Control, acting as Director of the Stoke Park Colony.

Robert Branthwaite was born in Birmingham in 1859, the son of Mr. Harrison Branthwaite, F.R.C.S., of Harlesden. He received his medical education at Charing Cross Hospital Medical School and having qualified in 1800 as L.S.A., in the following year took the diploma of M.R.C.S. Eng., and later the L.R.C.P. Lond. In 1896 he graduated in medicine at Brussels with honours, and also obtained the D.P.H. of the English Conjoint Board. Following appointments at Macclesfield, both at the General Hospital and the Park Side Asylum, he became medical superintendent of the Dalrymple Home for Inebriates at Rickmansworth, and during the years between 1884 and 1898 he acquired at that institution a practical knowledge both of the psychology of the drug- and alcohol-addict, and of the therapeutic measures found most useful in cases which were amenable to treatment. His appointment as an inspector under the Inebriates Act was made at the end of 1898, and his duties were now to organise the establishment of reformatories for the care and treatment of criminal and recidivist drunkards, when, to facilitate the carrying out of these duties, he was appointed an inspector of prisons simultaneously. For four years he acted as medical adviser to the Reformatory and Industrial Department; in 1914 he was the first inspector appointed under the Mental Deficiency Act; and two years later he became Commissioner of the Board of Control, where his varied experience as superintendent of an institution under the Habitual Drunkards Act, as an officer in a mental hospital and in prison work, made him an admirable colleague. Indeed, the annual report of the Board for the year 1926 paid a special tribute to the thoroughness which characterised Branthwaite's work, his active interest in the various branches of his duties, and the special value of his investigations for the promoting of improvements in the dietaries of mental hospitals. Branthwaite possessed considerable literary capacity, and his reports, issued at intervals, upon his various activities were always of interest, for his accuracy and originality of view was assisted by his clear style.

During the war Branthwaite rejoined his battalion, the Civil Service Rifles, in which he had held a commission for many years, and, having proceeded to France early in 1915, he saw considerable service, was mentioned in despatches, was wounded, and was finally incapacitated from further overseas' service. At his retirement, when he was created C.B., he became Director of Medical Services at Stoke Park Colony, near Bristol.

Dr. Branthwaite married first, in 1883, Lena Mary, daughter of W. M. Williams, B.Sc., who died in 1901, and secondly, in 1907, Edith, daughter of the late H. J. Mizen, who survives him with one daughter.

# The Services.

## ROYAL NAVAL MEDICAL SERVICE.

Surg. Capt. (retd.) R. H. Mornement is promoted to Surg. Rear Admiral (retd.)

### ROYAL NAVAL VOLUNTEER RESERVE.

Proby. Surg. E. C. Johnson to be Surg. Lt.

## ROYAL ARMY MEDICAL CORPS.

Lt.-Col. H. V. Bagshawe retires on retd. pay.

Maj. and Bt. Lt.-Col. R. A. Bryden to be Lt.-Col., vice Lt.-Col. H. V. Bagshawe.

Temp. Lt. P. D. Johnson to be Lt. on prob. and relinquishes the temp. rank of Lt.

Lt. (on prob.) J. M. Ryan, from the secd. list, is restd. to the estabt.

Temp. Lt. W. V. Harke resigns his commn.

### ARMY DENTAL CORPS.

Lts. (on prob.) W. A. McClelland and W. B. Martin are confirmed in their rank.

### TERRITORIAL ARMY.

Capt. R. J. Walker, from 52nd (Lowland) Divl. Signals, R. Signals, to be Capt.

W. M. Evans and W. C. Wilson to be Lt.

## ROYAL AIR FORCE.

Flight Lt. R. T. F. Grace, is transferred to the Reserve, Class D.ii, and is employed with the Regular Air Force for a period of one year.

The undermentioned Flight Lts. relinquish their short service commissions on account of ill-health: J. O. Priestley and S. F. Heatley.

# Correspondence.

"Audi alteram partem."

## THE CLEVELAND DISASTER.

*To the Editor of* THE LANCET.

SIR,—The X ray and Radium Protection Committee met this afternoon under the chairmanship of Sir Humphry Rolleston. It is the intention of this Committee, as further facts reach it, to pursue investigation into the whole question of possible danger from X ray films, and to draw up such recommendations as are considered advisable. In the meantime, the Committee makes the following suggestions:—

(1) Care should be taken to ensure that X ray films, whether exposed or unexposed, are stored and handled in such a manner as to reduce to a minimum the danger of fire.

(2) Films should not be left lying about, but should be stored in filing cabinets or cupboards in such a way as to limit the number of films actually lying open during reference.

(3) On no account should smoking or naked lights be permitted in proximity to any film store.

(4) In the case of large hospitals or institutions where considerable numbers of films may be accumulated, a special store, preferably isolated, should be arranged solely for such films.

We are, Sir, yours faithfully,

SIDNEY RUSS,
STANLEY MELVILLE,
Hon. Secretaries.

London, W., May 29th, 1929.

## THE INITIAL LESION OF SLEEPING SICKNESS.

*To the Editor of* THE LANCET.

SIR,—I have been much interested in the correspondence in your issue of June 1st, especially in Dr. Hanschell's letter with reference to the description of this lesion in text-books of tropical medicine. The last paragraph of this letter is, I think, not strictly correct. Dr. Graf submitted to me his paper before publication, but I did not gather from it that he himself claimed his observations as being in any way original, but as a remarkable confirmation of Manson's well-known views. I still preserve the notes of the first case (Mrs. S.) of human trypanosomiasis from the Congo diagnosed by Manson, which is described in the third edition of Tropical Diseases (1903, p. 179) and which proved fatal in October, 1903. As I have described in my Life of Sir Patrick Manson (1927, p. 198) the infection was attributed by Mrs. S. to the bite of a fly which was accompanied by great irritation. It was, of course, not realised at that time that human trypanosomiasis and sleeping sickness were merely stages of the same infection transmitted by the tsetse-fly.

In the fourth edition of Tropical Diseases (1907, p. 159) Manson described the connexion of the disease with an infected tsetse bite in the following words: "I would suggest that the bite of an infected glossina is followed in a proportion of cases by a degree of local irritation of greater or less severity. This subsides in the course of a few days, to be followed, somewhat later, by fever." This statement with minor modifications has been transcribed by me in the later editions of Manson's book, which I have piloted through the press.

Enough has been said to demonstrate once more the correctness of Manson's perspicuity, which has now become almost traditional.

I am, Sir, yours faithfully,

PHILIP MANSON-BAHR, M.D., F.R.C.P.

Weymouth-street, W., May 31st, 1929.

## BLOOD STANDARDS.

*To the Editor of* THE LANCET.

SIR,—This interesting correspondence seems to have led, so far, only to a clarification of the position without contributing to improvement of hæmatological technique. With regard to the total red corpuscle count, there are, of course, a number of sources of error. First, one is dealing only with a random sample of the patient's blood; secondly, there may be errors of dilution; thirdly, only a random sample of the diluted blood is used for counting; and, lastly, there must be errors in the enumeration itself. So far your correspondence columns have contained no suggestions as to means of overcoming any of these defects. Clearly the only factors capable of control are the dilution and the enumeration. The former can be made accurate only by some form of automatic pipette, such as the one I described in your columns (1924, i., 906): here errors due to sucking up too much or too little blood are completely obviated. The enumeration must extend to a very large number of cells in the hæmocytometer, as is discussed by W. J. Purdy (*Brit. Jour. Exper. Path.*, 1925-26, vi., 210).

The total white cell count suffers from the same defects as does the red, but again the automatic pipette controls one of the factors. The differential count does indeed present a difficult problem, and when Dr. Tidy says: "It is well known how erratically the various cells are distributed on a slide," no one can disagree. I would, however, suggest that the distribution of cells on a cover-slip is much more nearly an even one. Furthermore, if films be made by dropping a cover-slip on to another one, which bears a drop of blood, there will be obtained two films, which together contain all the cells of one whole drop of blood—i.e., nothing will have been lost on a spreader. If now it be decided to count 500 cells, 250 can be counted on each film. I am convinced that the figures obtained by this means are much less variable than those obtained when films are made on slides.

I am, Sir, yours faithfully,

A. PINEY.

Maldon, Essex, May 28th, 1929.

## THE ALLEGED TOXIC ACTION OF ACCESSORY FOOD FACTORS.

*To the Editor of* THE LANCET.

SIR,—In your issue of April 6th (p. 735) Dr. Clifford Hoyle writes: ". . . in tropical countries where calcium phosphate calculi are common . . ." This conclusion needs modification. In India, out of 100 urinary calculi analysed in this laboratory only two were found to be approximately pure phosphate calculi. The details of this analysis will shortly be published in the *Indian Journal of Medical Research*. Phosphates were present mixed with urates in 11, with oxalates in 12, and with both urates and oxalates in 25, so that even if "calcium phosphate calculi" be taken to mean stones in which some calcium phosphate occurs, such calculi form only 50 per cent. of the whole. The mean percentage of phosphate in the 100 stones was 7·9, reckoned as $P_2O_5$. All the $P_2O_5$ was not combined with calcium; some was combined with magnesium and ammonium. In England, Benjamin Moore [1] found some calcium phosphate in 16 out of 24 calculi analysed (67 per cent.) and the mean percentage of phosphate (as $P_2O_5$) in his stones was 7·7. We have no reason for thinking that calcium phosphate is a more common constituent of urinary calculi in India than in England.

I am, Sir, yours faithfully,

CLIVE NEWCOMB.

Nutritional Research Laboratories, Indian Research Fund Association, Coonoor, South India, May 8th, 1929.

[1] Brit. Med. Jour., 1911, i., 737.

## CANCER OF THE COLON.

*To the Editor of* THE LANCET.

SIR,—I cannot agree with some of Mr. Flint's remarks, for I think Mr. Grey Turner is perfectly correct in preferring the oblique incision over the colon on the left hand side to the paramedian incision. After considerable experience of the oblique incision I have come to the conclusion it is far the most satisfactory. The rectus is dissected out of its sheath and displaced towards the middle line. This incision gives very free access to the colon and enables mobilisation of the splenic angle to be quite readily and easily carried out should this be required. With a paramedian incision mobilisation of the splenic angle is difficult. I have never seen post-operative hernia follow this incision, and in my experience it is one of the most satisfactory incisions as regards after-results as any used in the abdominal wall.

In regard to the blood-supply of the colon, in my opinion necrosis following anastomosis is always due to bad blood-supply, and I have actually seen this happen in the past on more than one occasion. More particularly is this the case in the common situation for growth towards the lower end of the sigmoid flexure. I agree with Mr. Flint as to the safety of Paul's operation, but he fails to mention two serious objections to it: (1) that it involves undergoing two, if not three, operations; and (2) that it most invaribly leaves a weak scar with liability to tiresome hernia.

I am, Sir, yours faithfully,

London, June 3rd, 1929. J. P. LOCKHART-MUMMERY.

## SPRUE AND CŒLIAC DISEASE.

*To the Editor of* THE LANCET.

SIR,—In connexion with Dr. Thaysen's article in your issue of May 25th (p. 1086) on the differentiation of these two diseases, it may be of interest to recall that Dr. A. C. Hampson and myself demonstrated by the graphic method (Guy's Hospital Reports, April, 1924) that the blood in sprue showed the same megalocytic changes as in Addison's (pernicious) anæmia. At the same time we examined the blood of several cases of cæliac disease, though at the time unfortunately only one or two cases were available; in these we found no corresponding blood changes. These last results were never published. There would thus seem to be a simple and effective method of differentiating the two diseases, though admittedly further work is needed on these lines.

I am, Sir, yours faithfully,
J. W. SHACKLE, M.R.C.S., L.R.C.P.

Guy's Hospital, S.E., May 30th, 1929.

## EPHEDRINE AND EPHETONINE.

*To the Editor of* THE LANCET.

SIR,—In the report of a discussion on the Action and Use of Ephedrine (THE LANCET, May 18th, p. 1036) I am credited with the statement: "In Germany ephedrine had been synthesised and with a mixture of dextrose placed upon the market as ephetonine." This has obviously been wrongly reported, no doubt from the resemblance of dextro and dextrose. The statement I actually made was to the effect that ephetonine is a compound of dextro- and lævo-rotatory ephedrine, manufactured synthetically.—I am, Sir, yours faithfully,

Oxford, May 30th, 1929. J. A. GUNN.

HOSPITAL COÖPERATION IN DEVON.—A conference of representatives of hospitals in Devon has been held at Exeter to consider the situation created by the Local Government Act. The outcome was the appointment of a Committee, consisting of an equal number of representatives of large and small hospitals and medical men, of whom three are to be general practitioners.

# Public Health Services.

## SCHOOL MEDICAL SERVICE.

| — | No. on roll. | Aver. E.S. attendance. | Routine inspections. | Specials and reinspections. | Per cent. of defects.* |
|---|---|---|---|---|---|
| Hull .. .. | 47,033 | 40,542 | 16,983 | 46,156 | 20·8 |
| Sheffield .. | 79,712 | 71,452 | 27,693 | 136,684 | 16·07 |
| Leicester .. | 31,271 | 27,565 | 10,347 | 30,089 | 14·59 |

E.S. = Elementary school.
* Excluding dental defects and uncleanliness.

### *Hull.*

Dr. W. A. Daley, in his introduction to the detailed report of Dr. J. Morrison, shows that the coördination of the public health work has gone so far as to include even the port sanitary medical officers. There are now in Hull four senior assistant medical officers of health dealing respectively with: (1) tuberculosis; (2) maternity and child welfare; (3) school medical service; (4) port sanitation and infectious disease, each available to come to the aid of another in times of pressure. The institutions belonging to each department are at the service of the others—e.g., the clinics, sunlight apparatus, and disinfecting station.

Much progress has been made in developing facilities for treatment such as X rays for ringworm, while the East Hull Clinic, the open-air school and an orthopædic hospital are in preparation; a sight-saving class and an open-air class are already working. The increasing recognition of the good work done at the clinics is shown by the rise in total attendances during the year from 148,132 to 229,893. In pursuance of a definite policy a stand is being made against the treatment of casual dental cases at the clinics and since the parents have to obtain and usually pay for emergency treatment they are coming to realise the value of routine conservative work which largely obviates its necessity. Light treatment given at the Infant Welfare Centre to school-children is mainly afforded by the mercury-vapour and carbon arc lamps. Dr. Morrison states that while the number of cases so far treated (52) is too small for final conclusions, the treatment of definite diseases is on the whole disappointing as regards cure and the benefits obtained seem to be mainly attributable to the general tonic effect. He adds, however, that these results with school-children are in marked contrast to those obtained with cases from the other two departments in whom it was found that active rickets and some forms of tuberculosis, notably lupus, did remarkably well. The orthopædic clinic has been almost overwhelmed by the results of last year's epidemic of anterior poliomyelitis.

Dr. Morrison has made an important study of the distinction between the dull and the backward children. The dull are found to be nearly as defective in general intelligence (measured by the Stanford Binet tests) as in educational attainments. They are a large and important class, never able to attain an average level of education, which should be dealt with by special methods. The backward, on the other hand, have far higher innate intelligence and their school failure is attributable rather to extrinsic factors such as ill-health, bad sight or hearing, or to lack of suitable educational facilities. With them may be grouped the cases of delayed development who can recover lost ground—a small number in Dr. Morrison's experience.

Mr. Meadon Baker, the organiser of physical training, states the governing factor that will lead to the desired goal of good posture is the teachers' personal attitude to the physical work. If the teacher shows real faith by persistent effort, good posture can be obtained, and by daily exercises the commonest types of deformity, round shoulders and flat chests, can be almost eradicated.

*Sheffield.*

Dr. Thomas Chetwood writes that as his report is framed on set lines, it must largely consist of statistics, adding: "Figures alone give only an imperfect picture of the work that has been done and require some explanation." A few lines later he quotes Sir George Newman: "If when the reader turns to study these dull records of the school medical service he will come with understanding, he will discover the hidden secret of an unseen reform which is silently but certainly changing the prospects and hopes of the English people." It seems all too true that the mass of facts here set forth has precluded some of the interesting observations to which Dr. Chetwood has made us yearly look forward; but at the same time they do reveal what an immense amount of work is being done and the progress that is being made. For example, the clinics have grown until it can almost be said that the accommodation is adequate, and the latest clinic on the Manor Estate Dr. Chetwood is able to describe as "the best that I have yet seen anywhere in England."

The number of routine examinations made during 1928 was nearly 5000 more than in 1927. The general condition of the children as shown by their physique, nutrition, and cleanliness tends steadily to improve; interesting anthropometric tables show that the improvement in height and weight has brought them more than up to the new standards of the Board of Education. Attendances at the clinics go on increasing, but in one aspect this is not so satisfactory. Additional evening clinics are now held for children suffering from toothache, but it is stated that parents consent to extraction but fail to appreciate the value and importance of sound conservative treatment and that many of the children who come to the "toothache" clinic are those whose parents have previously refused routine dental treatment. In some parts of England the evils of such a proceeding have led to reduction of facilities for treatment of "casuals" with added emphasis on routine conservative work.

A great step forward has been taken with the orthopædic scheme which is now awaiting the appointment of an orthopædic surgeon to be complete. Mr. H. A. Cole, chief superintendent of physical training, gives a critical survey of his work in Sheffield. He stresses the importance of good posture, any deviation from which means a strain upon one or more organs, and states that in classes where attention is paid to posture there is a brightening up in alertness of both body and mind. Games played on open spaces, he says, have both an immediate value as an antidote to cramped homes and school conditions and a preventive of ailments which is economically better than remedial treatment. The indirect gain from the wider outlook obtained by contact with other schools fosters the social amenities on which the fabric of civilisation is built.

*Leicester.*

Dr. A. Warner explains the increase in work at the clinics as due in part to an arrangement with the county council by which the aural clinic is more fully utilised, and partly by the greater number of dental cases, due to the appointment of an additional dentist and the establishment of a clinic in a school. He believes the chief obstacle to securing more general dental treatment to be the reluctance of parents to spend money and time in getting to the clinics and waiting there. If this is correct, the solution will be found in establishing dental clinics at the schools so that the children can, with the parents' consent, be taken direct from the classroom. In one such example 100 per cent. of those needing dental treatment were actually treated.

Mr. J. A. Keen, the aural surgeon, gives the records of some 17 children treated by the Zünd-Burguet method with exact measurements of the auditory acuity. The work was done in his private consulting-room at his own expense. The scheme for the treatment of out-patients' cripples and for the use of ultra-violet light has now received the sanction of the Board of Education and the buildings are likely to be proceeded with at once. A day open-air school is planned and good work has been done by two special classes run on the lines of an open-air school. The Mablethorpe Summer Camp, which is a voluntary institution, was used for two months last autumn as a residential open-air school, and Dr. Warner says he cannot remember any previous year in which the children appeared to benefit so much.

The organisers of physical training, Mr. R. G. Lean and Miss Jean Bennett, state that physical education aims at the physical, mental, and moral development of the individual and is thus an integral part of general education—and we might add closely related to school hygiene. Its association with obsolete forms of drill and meaningless manœuvrings may readily stifle the real spirit of education, and continued efforts are being made to give teachers the right concept of the work by special courses of instruction. Closely related to this work is that of remedial exercises, which is continuing to give good results. Dr. Warner has conducted a special inquiry on the influence of the home on the nutrition of the child, and compared 100 children from good homes with a similar number from poor homes. He found unmistakable evidence that the improved home conditions of group A have already had a beneficial effect on their general physique and nutrition, with definitely less evidence of rickets and chronic catarrhal conditions so often the precursors of definite ill-health.

Another unusual inquiry is that of Mr. Keen into the auditory ossicles from the specimens collected at mastoid operations. Many new facts are brought to light, one of them being the observation that the dimensions of these structures do not vary with age: they are already full size at birth.

## INFECTIOUS DISEASES IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 25TH, 1929.

*Notifications.*—The following cases of infectious disease were notified during the week:—Small-pox, 298 (last week 362); scarlet fever, 1778; diphtheria, 875; enteric fever, 46; pneumonia, 1300; puerperal fever, 53; puerperal pyrexia, 93; cerebro-spinal fever, 18; acute poliomyelitis, 8; encephalitis lethargica, 23; dysentery, 8; ophthalmia neonatorum, 108. No case of cholera, plague, or typhus fever was notified during the week.

The largest incidence of small-pox at the moment is in London (Poplar, 14 cases; Stepney, 20); South Shields, 13; West Ham, 28; Leigh (Lancs), 13; Stoke-on-Trent, 18; Swindon (Wilts), 9; Merthyr Tydfil, 10.

The number of cases in the Infectious Hospitals of the Metropolitan Asylums Board on May 28th–29th was as follows:—Small-pox, 307 under treatment, 10 under observation (last week 332 and 12 respectively); scarlet fever, 1411; diphtheria, 1569; enteric fever, 13; measles, 132; whooping-cough, 717; puerperal fever, 27 (plus 9 babies); encephalitis lethargica, 111; poliomyelitis, 2; "other diseases," 58. At St. Margaret's Hospital there were 18 babies (plus 10 mothers) with ophthalmia neonatorum.

*Deaths.*—In the aggregate of great towns, including London, there was 1 death from small-pox, 5 (1) from enteric fever, 81 (3) from measles, 5 (1) from scarlet fever, 63 (11) from whooping-cough, 21 (3) from diphtheria, 53 (16) from diarrhœa and enteritis under two years, and 51 (12) from influenza. The figures in parentheses are those for London itself.

The death provisionally classified to small-pox was assigned to Wimbledon. Another death from small-pox provisionally assigned to Rochdale should have been reported in the return for the week ended April 13th. Four more deaths provisionally classified to small-pox are now reported for the month of April and assigned 2 to Gravesend (Kent) and 1 each to Sale (Cheshire) and Caerphilly (Glamorgan). No great town reported more than 3 deaths from influenza except Birmingham with 4. Liverpool reported 16 deaths from measles, Sunderland 15, Birmingham 11, and Leeds 10. Manchester reported 9 deaths from whooping-cough,

Leeds 5, and Birmingham 4. Diarrhœa claimed 6 deaths each in Birmingham and Manchester and 4 in Liverpool.

The number of stillbirths reported during the week was 270 (corresponding to a rate of 45 per 1000 births), including 56 in London.

### DEATHS FROM SMALL-POX.

The fatal case of small-pox which occurred in Lincoln in the week ended April 13th was that of a woman, aged 36 years, who was a passenger on the *Tuscania*. It is understood that she had intended to travel from Liverpool to a destination in Wales, and notified the Liverpool Port Sanitary Authority to that effect; on leaving the ship however, she changed her mind, stayed one night in a hotel in Liverpool, and travelled to Lincoln on April 3rd. She became ill on the 4th or 5th, and was seen soon after by a private medical practitioner, who called in the deputy medical officer of health on the 9th, when she was removed to Lincoln Isolation Hospital. The initial symptoms from the 6th to the 8th are understood to have been severe, and a prodromal rash appeared on the 9th. On that day Dr. D. C. Lamont, medical officer of health, tells us that the patient had a vivid erythematous rash on the face, neck, shoulders, and upper portion of the front of the thorax. Numerous cutaneous hæmorrhages were to be seen all over the body with the exception of the abdomen, and two or three papules on the palm of a hand. She was drowsy and restless, and at times semi-conscious, temperature remained at 105° F. On the 10th "lobster rash" was more pronounced and the face swollen, but the rash had not extended in area. Two vesicles on the side of the abdomen had become umbilicated, and the papules on the hand had reached the early vesicular stage. The hæmorrhages which involved practically the whole of the trunk and all the limbs were purpuric in type, but the face and neck remained practically free. At noon on this day the patient was transferred to the Nottingham Small-pox Hospital, where she died about mid-day on April 11th. The diagnosis was hæmorrhagic or black small-pox with a prodromal "lobster rash," the true small-pox eruption being limited to about five vesicles. Dr. Lamont adds that there were two small vaccination vesicles present on one arm, each smaller than a threepenny-piece. The patient had been vaccinated successfully in infancy and again on board ship on (?) March 31st.

The death from small-pox assigned to Stoke-on-Trent in the return for the week ended April 20th was that of a child, 7 years of age, who was suffering from broncho-pneumonia. Dr. A. Wotherspoon, medical officer of health, informs us that the child's condition was hopeless on admission to hospital. The certificate was filled in: (1) broncho-pneumonia, (2) small-pox.

The fatal case at Woolwich in the week ended May 18th was that of a boy 9 years of age; the rash appeared on May 2nd and became confluent in the vesicular stage. Dr. J. Macmillan, medical officer of health, states that the source of infection was not definitely traced, but there are grounds for believing that it was associated with the Gravesend cases. The cause of death as given on the death certificate was "small-pox; never vaccinated."

# Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At recent examinations the following candidates were successful in the undermentioned subjects:—

*Surgery.*—W. T. Ellis, Manchester and Charing Cross Hosp.; A. Freitag, Charing Cross Hosp.; J. D. B. Games, St. Bart.'s Hosp.; W. St. A. Hendricks, St. Mary's Hosp.; L. G. E. K. Lewis, Middlesex Hosp.; and B. J. Niall, London Hosp.

*Medicine.*—F. W. Crossley-Holland, St. Bart.'s Hosp.; A. Freitag, Charing Cross Hosp.; K. E. Gallaher, Manchester; and K. M. Seedat, Charing Cross Hosp.

*Forensic Medicine.*—P. S. Balachandran, Middlesex Hosp.; A. Freitag, Charing Cross Hosp.; and K. E. Gallaher, Manchester.

*Midwifery.*—A. Campbell, Edinburgh; R. H. El Sawy, St. George's Hosp.; B. L. Fishout, Cardiff; A. Freitag, Charing Cross Hosp.; C. Parthasarthe, Birmingham; and A. Scher, Basle and London Hosp.

The Diploma of the Society was granted to the following, entitling them to practise medicine, surgery, and midwifery: F. W. Crossley-Holland, A. Freitag, and K. E. Gallaher.

UNIVERSITY OF ABERDEEN.—The Senate has recommended to the University Court that Lord Beaverbrook's gift of £1000 be devoted to the purchase and the installation of X ray apparatus in the Anatomical Department of the University.

UNIVERSITY OF CAMBRIDGE.—It is authoritatively stated that in desiring the residue of his estate to be applied in perpetuity for the promotion of education in chemistry, biochemistry, physical science, and other allied subjects, the late Mr. John Humphrey Plummer expressed his wish that a professorship or professorships, each of the annual value of £1200, should be established in the University. The trustees are advised that the estate should yield an income of about £10,000 a year.

UNIVERSITY OF LONDON.—The degree of D.Lit has been conferred on Mr. F. A. P. Aveling, D.Sc., University Reader in Psychology, for a Thesis on The Psychological Approach to Reality.

*University College.*—It is announced that the examination for two Goldsmid entrance exhibitions (which entitle the holders to the final course for a registrable medical qualification) has been deferred until July 19th. The subjects are anatomy, physiology, and general pathology, and candidates must apply to the Secretary of the College by July 6th.

UNIVERSITY OF LEEDS.—At the next degree ceremony in July the honorary degree of D.Sc. will be conferred on Dr. T. Wardrop Griffith, professor of medicine at Leeds from 1910 to 1925, and previously professor of anatomy from 1887.

EPSOM COLLEGE: *Sir Walter Buchanan Scholarship.*—The Council will shortly award this scholarship, of about £38 a year. It is primarily intended for the sons of deceased or prematurely invalided officers of the Indian Medical Service, but failing any such candidates, it may be granted to the sons of legally qualified medical men of wholly British parentage in necessitous circumstances who have practised medicine for at least five years in India. Forms of application may be had from the Secretary, Mr. J. B. Lamb, 49, Bedford-square, London, W.C.1.

LONDON JEWISH HOSPITAL MEDICAL SOCIETY.—Sir Humphry Rolleston will open a symposium on Some Diseases of the Jews, at 3 P.M. on Thursday, June 13th, at the London Jewish Hospital, Stepney Green, E.

RESEARCH DEFENCE SOCIETY.—The annual general meeting of this Society will be held at 11, Chandos-street, Cavendish-square, W., on Wednesday, June 12th, at 3 P.M., with Lord Lamington in the chair. Prof. A. V. Hill will deliver the Third Stephen Paget Memorial Lecture, entitled Enemies of Knowledge.

INDIAN MEDICAL SERVICE DINNER FUND.—The annual dinner of the Indian Medical Service will be held at the Trocadero Restaurant, Piccadilly-circus, London, on Wednesday, June 19th, at 7.15 P.M. Further information is obtainable from the joint Hon. Secretary, Sir Thomas Carey Evans, 31, Wimpole-street, W.1.

AUSTRALIAN AND NEW ZEALAND MEDICAL ASSOCIATION IN ENGLAND.—The summer dinner of this Association will be held at the Trocadero Restaurant, Piccadilly, on Friday, June 14th, at 7.45 for 8.0 P.M. Mr. F. F. Muecke will preside, and Mr. Sampson Handley and Prof. F. R. Fraser will be the official guests of the Association. All medical visitors from Australia and New Zealand, whether members of the Association or not, are invited to be present, and guests may be brought. Communications should be addressed to Mr. P. J. Jory, 26, Queen Anne-street, London, W.1.

SOUTH AFRICAN MEDICAL ASSOCIATION: ANNUAL CONGRESS.—The scientific meeting was opened at Port Elizabeth on May 13th by the Hon. A. P. J. Fourie. Dr. A. J. Orenstein inducted Dr. R. M. Leith into the Presidential chair. In doing so he observed that it could be said with truth that a country got the medical profession it deserved. Not only did the enlightenment of a country react in a subtle way on the medical men practising in it, but the work of progressive and altruistic practitioners could be so hampered by ill-conceived legislation, and by the apathy of public bodies as to reduce its potentiality for public service to a lamentably low level. Dr. Leith spoke of the ability of the medical profession to instruct and enlighten a public which was becoming increasingly interested in health matters, and ready to learn. But there was need, he said, for the profession first to educate themselves more on the preventive side. The student had been taught to regard the diagnosis and treatment of established disease as the important thing, and prevention had not always been sufficiently stressed in their training.

Dr. C. H. Durrant, Chief Medical Officer, St. Kitts-Nevis Medical Service, has been appointed an official member of the Legislative Council of the Presidency of St. Christopher and Nevis.

MANCHESTER'S WATER-SUPPLY.—In order to increase Manchester's water-supply a huge dam is to be constructed at Hawes Water in the Mardale Valley of Westmorland to add to the length and depth of the lake at a cost of about £12,000,000. Subject to the approval of the City Council, the Waterworks Committee have sanctioned the commencement forthwith of preparatory works. Five years will be required for completion of the scheme.

NATIONAL PHYSICAL LABORATORY.—The report of this laboratory for 1928 shows that its work has expanded considerably during the year. Numerous X ray protective materials such as lead glass and lead rubber have been tested and the X ray departments of many hospitals have been inspected. There are, it is stated, many indications that the publication of the recommendations of the X Ray and Radium Protection Committee, together with the facilities provided by the laboratory, have resulted in marked improvements in the standard of protection attained by British makers of X ray apparatus. During the year a constant voltage generator has been installed in the Radiology Department. The details of this machine are given in the report and are interesting as showing the trend of modern X ray generator design. In 1928 the unit of X ray intensity was defined, but much experimental work must be done before an ionisation chamber is evolved which satisfies the conditions laid down at Stockholm. Preliminary investigations have been undertaken at the laboratory, and these have yielded important results, in fact, attempts have already been made to express the barium platino cyanide dose in "r" units. The executive committee calls attention to the large amount of work relating to fundamental standards of measurement which has been done by the various departments. A section of the report devoted to definitions of the units and standards employed at the laboratory bears witness to the high degree of accuracy achieved in physical measurements.

INTERNATIONAL CONFERENCE ON HEALTH OF THE SEAMAN.—The announcement that the Second Conference on the Health and Welfare of Merchant Seamen will take place at Geneva on Oct. 7th, 8th, and 9th requires some supplementary information for the benefit of those who have not followed the movement of which this Conference is only one phase. Some five years ago Dr. Harald Engelsen, of the Norwegian Red Cross Society, submitted to the Board of Governors of the League of Red Cross Societies a far-reaching scheme for promoting the health and general welfare of the merchant seamen on both national and international lines. In 1926 the first Conference on the Welfare of the Seaman, known as the Oslo Conference, was convened by the Norwegian Red Cross Society and the League of Red Cross Societies, a unanimous decision being taken to appoint a Standing Committee which would ensure continuity and coördination of the policies adopted at this Conference. This Standing Committee has met on several occasions in Paris during the last three years, and its labours have been so fruitful that the time has seemed ripe for calling a second Conference, in order that the many forces available for the benefit of the merchant seaman may be coördinated on sound lines. This Conference is convened under the auspices of the Norwegian Red Cross Society, the League of Red Cross Societies, the International Unions against Venereal Disease and Tuberculosis, and the International Association of Mercantile Marine Officers. The British representatives mentioned in the provisional agenda are Sir John Sandeman Allen, who will deal with the general situation in home ports; Mr. Leonard Bowden, who will speak on welfare work and social insurance; Dr. W. M. Willoughby, who will discuss the problem of tuberculosis; and Dr. R. M. F. Picken, who will deal with venereal disease, all in connexion with the merchant service. The subject of ships' libraries will be discussed by Mr. A. Mansbridge in coöperation with Mr. G. Stenersen of Norway. For further information application should be made to the General Secretary of the Conference, Dr. F. Humbert, the League of Red Cross Societies, 2, Avenue Velasquez, Paris, VIII.


**THE LANCET: SUBSCRIPTION RATES.**

| | | | | |
|---|---|---|---|---|
| INLAND | One Year | £2 | 2 | 0 |
| | Six Months | 1 | 1 | 0 |
| | Three Months | 0 | 10 | 6 |
| ABROAD | One Year | 2 | 10 | 0 |
| | Six Months | 1 | 5 | 0 |
| | Three Months | 0 | 12 | 6 |


# Medical Diary.

*Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.*

## SOCIETIES.

ROYAL SOCIETY, Albemarle-street, W.

THURSDAY, June 13th.—4.30 P.M. *The following papers will be read:* F. M. L. Sheffield: Chromosome Linkage in Œnothera, with special reference to some Fl. Hybrids. (Communicated by Sir John Farmer, F.R.S.) Grace Briscoe and Winifred Leyshon: Reciprocal Contraction of Antagonistic Muscles in Peripheral Preparations—using Flashing Neon Lamp Circuit for Excitation of Nerve. (Communicated by Sir Charles Sherrington, F.R.S.) W. S. Stiles: The Scattering Theory of the Effect of Glare on the Brightness Difference Threshold. (Communicated by Sir John Parsons, F.R.S.) T. Moran: Critical Temperature of Freezing—Living Muscle. (Communicated by Sir William Hardy, F.R.S.) E. C. Smith: The Formation of Lactic Acid in Muscles in the Frozen State. (Communicated by Sir William Hardy, F.R.S.)

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

WEDNESDAY, June 12th.—2 P.M. and 6 P.M., SURGERY. Provincial Meeting at Sheffield. Lunch can be obtained on the train. From 2 P.M.–5 P.M., Operations, Clinical Cases and Pathological Specimens at: (1) the Royal Infirmary; (2) the Royal Hospital. Also from 2 P.M.–5 P.M., there will be a demonstration of animal experiment to show the relation between diet and disease at the Field Laboratory. Tea will be provided and dinner for those who wish it later in the evening. A return train to London will be arranged so that Members can dine on it.

FRIDAY, June 14th.—5 P.M., OPHTHALMOLOGY. Annual General Meeting: Election of Officers and Council. Papers: Mr. E. Maddox: Demonstration of the Cheiroscope. Miss M. Dobson: Velanoskiascopy, a Control in the Correction of Astigmatic Defects.

RESEARCH DEFENCE SOCIETY, 11, Chandos-street, Cavendish-square, W.

WEDNESDAY, June 12th.—3 P.M., Annual General Meeting. Prof. A. V. Hill: Enemies of Knowledge. (Stephen Paget Memorial Lecture.)

## LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.

TUESDAY, June 11th.—5 P.M., Dr. H. H. Dale: Some Chemical Factors in the Control of the Circulation (last Croonian Lecture).

**WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.**

MONDAY, June 10th.—10 A.M., Dr. Dowling: Skin Department. 11 A.M., Mr. Tyrrell Gray: Ward Visit. 2 P.M., Mr. Bishop Harman: Eye Department.

TUESDAY.—10 A.M., Medical Registrar: Ward Visit. 2 P.M., Mr. Addison: Operations. 2 P.M., Mr. Sinclair: Surgical Out-patients.

WEDNESDAY.—10 A.M., Dr. Owen: Children's Out-patient Department. 2 P.M., Mr. Tyrrell Gray: Operations. 2 P.M., Dr. Scott Pinchin: Medical Out-patients.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 11.30 A.M., Mr. Simmonds: Demonstration of Fractures. 2 P.M., Mr. MacDonald: Genito-Urinary Out-patient Department.

FRIDAY.—10 A.M., Dr. Pritchard: Medical Ward Visit. 12 noon, Dr. Shaw: Clinical Demonstration. 2 P.M., Mr. Vlasto: Throat, Nose and Ear Department.

SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy Department. 10 A.M., Dr. Owen: Children's Medical Out-patient Department. 10 A.M., Resident Assistant Surgeon: Ward Visit. Medical and Surgical Out-patients at 2 P.M., daily. Operations. Special Departments daily, 10 A.M. to 5 P.M., Saturdays 10 A.M. to 1 P.M. Special Classes in Anæsthetics and Operative Surgery.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, June 10th.—2.30 to 5 P.M., Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M., Medical, Surgical, Ear, Nose and Throat Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M., Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M., Dental Clinics. 2.30 to 5 P.M., Medical, Surgical, Nose, Throat and Ear Clinics. Operations.

FRIDAY.—10.30 A.M., Throat, Nose and Ear Clinics. 2.30 to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, June 10th, to SATURDAY, June 15th.—MEDICAL SOCIETY, Lecture Room, 11, Chandos-street, Cavendish-square, W., M.R.C.P. Course of Lectures, on Tues. and Frids. at 8.30 P.M. Tues., Dr. Bernard Myers:

The Differential Diagnosis of Splenomegaly with the Treatment of the Diseases Concerned. Frid., Dr. L. S. T. Burrell: Bronchiectasis, Abscess of Lung, and Empyema.—QUEEN MARY'S HOSPITAL, Stratford, E., Wed. at 2.30 P.M., Dr. A. A. Osman: Debility in Children and Adults. No fee.—ROYAL EAR HOSPITAL, Huntley-street, W.C., Thurs., 2 P.M., Mr. E. A. Peters: Aural Demonstration. No fee.—ROYAL WESTMINSTER OPHTHALMIC HOSPITAL, Broad-street, W.C. Course in Ophthalmology. Every afternoon. Clinical work and lectures.—CHELSEA HOSPITAL FOR WOMEN, Arthur-street, S.W. Course in Gynæcology. Afternoons and some mornings. Operations and lectures. Two weeks' Course.—VICTORIA PARK HOSPITAL, E. Special Course in Diseases of the Chest for two weeks. All day course, lectures, special demonstrations, and operations.—Further particulars from the Fellowship of Medicine.

UNIVERSITY COLLEGE, Gower-street, W.C.
MONDAY, June 10th.—5 P.M., Prof. R. Chambers (New York): Some Aspects of the Protoplasmic Membrane. (Free Public Lecture.)

NATIONAL HOSPITAL, Queen-square, Bloomsbury, W.C.
MONDAY, June 10th, 2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Kinnier Wilson: Neurological Complications of the Acute Specific Fevers.
TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Mr. Donald Armour: Head Injuries.
THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Purdon Martin: Hysteria.
FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Sir Percy Sargent: Cervical Ribs.

EAST LONDON HOSPITAL FOR CHILDREN, Shadwell, E.
WEDNESDAY, June 12th.—4.15 P.M., Clinical Meeting. There will be a discussion on Neurological Diagnosis in Children, followed by demonstration of cases of interest in the wards. Tea served at 4 P.M. All practitioners are cordially invited.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINICS.
TUESDAY, June 11th.—3.30 P.M. (at the Jessop Hospital): Prof. Phillips: The Early Diagnosis of the Cervix.
FRIDAY.—3.30 P.M., Mr. Cobb: Complications of Middle-ear Disease.

# Appointments.

BROWN, R. CHRISTIE, M.S. Durh., F.R.C.S. Eng., has been appointed Obstetric Surgeon to the City of London Maternity Hospital.

WILSON, ARTHUR J., M.D. Edin., Honorary Physician, Coventry and Warwickshire Hospital.

King Edward VII.'s Convalescent Home for Officers, at Osborne, I.O.W.—WALLACE, Sir CUTHBERT, M.B., B.S. Lond., F.R.C.S. Eng.; GASK, G. E., F.R.C.S. Eng.; CHOYCE, C. C., M.D., Ch.B. Edin., F.R.C.S. Eng.; CARLING, E. R., M.B., B.S. Lond., F.R.C.S. Eng.; WILLCOX, Sir WILLIAM H., M.D. Lond., F.R.C.P. Lond.; MILLER, C. H., M.D. Camb., F.R.C.P. Lond.; FLETCHER, H. MORLEY, M.D. Camb., F.R.C.P. Lond.; and PURVES-STEWART, Sir J., M.D., C.M. Edin., F.R.C.P., have been appointed to the Consulting Staff.

# Vacancies.

*For further information refer to the advertisement columns.*

*Birkenhead County Borough.*—Res. Asst. M.O. £450.
*Birmingham, City Hospital for Infectious Diseases, Little Bromwich.*—4th Asst. M.O. £300.
*Birmingham, Selly Oak Hospital.*—Cas. O. At rate of £200.
*Bootle, Borough Hospital, Derby-road.*—Hon. Dental Surgeon.
*Bristol General Hospital.*—Hon. Clin. Assts.
*Buxton, Devonshire Hospital.*—Asst. H.P. At rate of £150.
*Cambridge, Addenbrooke's Hospital.*—Res. Anæsthetist. Also H.P. At rate of £180 and £130 respectively. Also H.S. At rate of £130.
*Coventry and Warwickshire Hospital.*—Hon. Asst. P. Also Res. H.S. £125.
*Derby, Derbyshire Hospital for Women.*—H.S. £150.
*Dewsbury and District General Infirmary.*—H.S. £200.
*Dreadnought Hospital, Greenwich, S.E.*—H.P. and H.S. Each at rate of £110.
*Dublin, Dr. Steevens' Hospital.*—Res. Surgeon.
*Dudley Guest Hospital and Eye Infirmary.*—H.S. Also Asst. H.S. £175 and £150 respectively.
*Dunedin, N.Z., University of Otago and Dunedin Hospital.*—Sen. Res. Surg. O. £500.
*East London Hospital for Children, &c., Shadwell, E.*—Res. H.S. At rate of £125.
*Exeter, Devon Mental Hospital, Exminster.*—Jun. Asst. M.O. £300.
*Exeter, Royal Devon and Exeter Hospital.*—Asst. H.S. At rate of £100.
*Gloucester, Gloucestershire Royal Infirmary and Eye Institution.*—Res. Surg. O. At rate of £175.
*Great Yarmouth General Hospital.*—Jun. H.S. £100.
*Grimsby and District Hospital.*—H.S. £250.
*Grosvenor Hospital for Women, Vincent-square, Westminster, S.W.* Hon. Gyn. Surg.
*Hampstead General and North-West London Hospital, Haverstock Hill, N.W.*—H.S. Also H.P. Each at rate of £100.
*Ilford Borough.*—Asst. M.O.H., &c. £450.
*Kensington, Fulham and Chelsea General Hospital, 194, Finborough-road, Earl's Court, S.W.*—Res. Cas. M.O. At rate of £100.
*Lancs County Council, High Carley Sanatorium, Ulverston.*—Asst. Tub. M.O. £450.
*L.C.C. Mental Hospital Service.*—8th Asst. M.O. £300.
*London Hospital, E.*—Cardiographic Department. Paterson Research Scholar. £400.
*London Temperance Hospital, Hampstead-road, N.W.*—Cas. O. At rate of £120.
***Lowestoft and North Suffolk Hospital.*—H.S. £120.**
*Manchester, Ancoats Hospital.*—Assist. Pathologist. £150.
*Manchester Babies' Hospital, Burnage-lane, Levenshulme.*—Sen. Res. M.O. At rate of £125. Also Radiologist.
*Manchester, Salford Royal Hospital.*—H.P. Also 3 H.S.'s to Special Departments. Each at rate of £125.
*M.A.B., Infectious Hospitals Service.*—Jun. Asst. M.O.'s. Each £500.
*M.A.B., Sutton, Surrey, Antitoxin Establishment, Belmont Laboratories.*—Bacteriologist. £700.
*Ministry of Health, Whitehall, S.W.*—M.O. £600.
*Newcastle-upon-Tyne, Royal Victoria Infirmary.*—Res. M.O. £250.
*Nottingham, Harlow Wood Orthopædic Hospital, near Mansfield.*—Res. Surg. O. £250.
*Norwich, Norfolk and Norwich Hospital.*—H.S. £120.
*Oswestry, Shropshire Orthopædic Hospital.*—Locum Tenens H.S.
*Perth Royal Infirmary.*—H.P. Also Jun. H.S. Each £75.
*Princess Louise Kensington Hospital for Children, N. Kensington.* Hon. Assist. Surgeon to Ear, Nose and Throat Dept.
*Prison Medical Service, Home Office, S.W.*—M.O. Class II. £350.
*Queen's Hospital for Children, Hackney-road, E.*—Surgeon to Ear, Nose and Throat Dept.
*Rochdale Infirmary and Dispensary.*—Jun. H.S. £175.
*Royal Free Hospital, Gray's Inn-road, W.C.*—Clin. Assts. to Special Depts.
*Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.*—H.P. At rate of £100.
*St. Andrew's Hospital, Dollis-hill, N.W.*—Hon. Surgeon to Ear, Throat and Nose Dept.
*Sheffield, Lodge Moor Hospital.*—Res. M.O. £350.
*Sheffield, Royal Hospital.*—Residents. At rate of £80.
*Sheffield Royal Infirmary.*—H.S. £80.
*Sheffield Union Hospital, Firvale.*—Res. Asst. M.O. £250.
*South Shields, Ingham Infirmary.*—Sen. and Jun. H.S. £200 and £150 respectively.
*Southern Rhodesia Medical Service.*—M.O. £500.
*Stockport Infirmary.*—H.S. £175.
*Sudan Government Medical Dept.*—Two M.O.'s. LE720.
*Swansea Hospital.*—H.P. £150.
*Truro, Royal Cornwall Infirmary.*—H.S. £170.
*Tunbridge Wells and Counties General Hospital.*—H.S. £160.
*Warrington Infirmary and Dispensary.*—H.P. At rate of £150.
*Watford Peace Memorial Hospital.*—Res. M.O. At rate of £150.

The Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at Grimsby (Lincs).

# Births, Marriages, and Deaths.

## BIRTHS.

EDMOND.—On May 29th, at The Crescent, Shrewsbury, the wife of William Edmond, F.R.C.S., of a daughter.
HOLMWOOD.—On May 26th, at Aldermaston, Berks, the wife of L. S. Holmwood, M.R.C.S., of a daughter.
LAWRENCE.—On June 1st, at a London nursing home, the wife of Dr. R. D. Lawrence, of Harley-street, of a son.
SANSOME.—On May 31st, at Sandwell House, West Bromwich, the wife of T. Heywood Sansome, M.B., Ch.B., of a daughter.
THOMSON.—On May 24th, the wife of Dr. Hugh Thomson, Musgrave Hall, Penrith, of a son.
WILSON.—On May 28th, at Frognall-lane, Hampstead, N.W., the wife of Dr. R. McNair Wilson, of a son.

## MARRIAGES.

LAWSON—BLUNDELL.—On June 3rd, at St. Pancreas Church, N.W., Donald B. C. Lawson, M.B., Ch.B., to Catherine Mary, only daughter of Mr. and Mrs. Robert C. Blundell, of Taviton-street, Gordon-square, W.C.
MICHAELIS—SCHWAB.—On May 28th, Theodore David Michaelis to Elisabeth Henrietta Schwab, M.D., B.S., daughter of Mr. and Mrs. S. M. Schwab, of Glenloch-road, Belsize Park.

## DEATHS.

BOWES.—On May 28th, at Dormer Cottage, Devizes, John Ireland Bowes, M.R.C.S., in his 80th year.
BRANTHWAITE.—On June 2nd, at 16, Percival-road, Clifton, Bristol, Robert Welsh Branthwaite, C.B., M.D., D.P.H., Director of Medical Services, Stoke Park Colony, Bristol, and late Commissioner, Board of Control, aged 70.
KENNEDY.—On May 13th, at Alassio, William Willoughby Kennedy, M.A. Glasg., M.B. Lond., D.P.H. Camb., M.D. Lond., aged 66.

***N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.***

# Notes, Comments, and Abstracts.

## THE BICENTENARY OF THE BIRTH OF OLIVER GOLDSMITH, M.B. DUB. & OXF.

By SIR WILLIAM HALE-WHITE, K.B.E., M.D., LL.D.,
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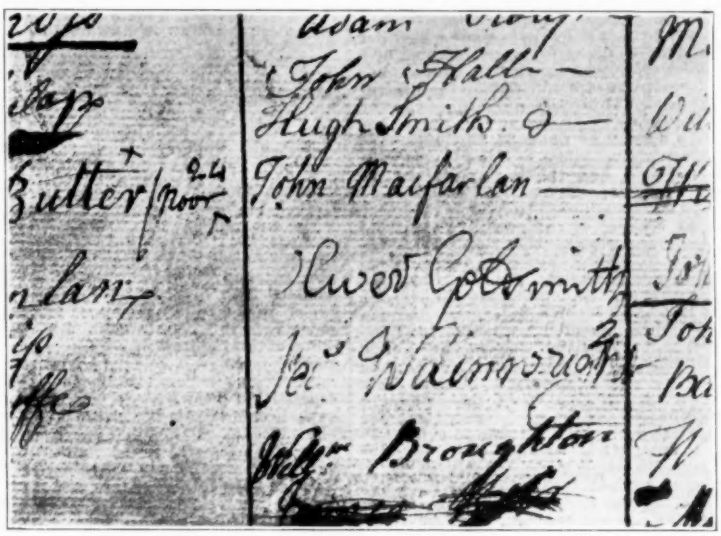
GOLDSMITH is usually said to have been born on Nov. 10th, 1728, but some think that a rather later date is more likely, and a later date is given on the memorial in Westminster Abbey, so the present time is near enough for us to call attention to the bicentenary of his birth. He was a physician of whom our profession may well be proud, for he wrote the best comedy in our tongue, and Goethe said: "It is not to be described the effect that Goldsmith's 'Vicar' had upon me, just at the critical moment of mental development. That lofty and benevolent irony, that fair and indulgent view of all infirmities and faults, that meekness under all calamities, that equanimity under all changes and chances, and the whole train of kindred virtues, whatever names they bear, proved my best education; and in the end these are the thoughts and feelings which have reclaimed us from all the errors of life." All Goldsmith's writings are beautiful English, much of the "Vicar of Wakefield" has become part of our common speech. He was loved by everybody. Burke wept when he heard of his death, and Reynolds put aside his painting for the day.

### *Medical Education.*

No consecutive account of him as a physician has been published.* His father, a clergyman, first at Pallas, then at Lissoy, near Athlone in Ireland, was so poor that, although his elder son Henry had gone to Trinity College, Dublin, as a pensioner, Oliver was sent as a sizar, he had an unhappy time there. He attended some anatomy lectures and took his A.B. degree on Feb. 27th, 1749, after which he returned home. It was discussed whether he should be a lawyer or a parson; he tried to go to America, but went for a walk while his ship, at Cork, was waiting for a wind, which sprang up suddenly, and the ship sailed before Oliver could get back to it. The M.B. degree of Dublin could not be taken after the A.B. until three years had elapsed, so the earliest date at which Goldsmith could take it was 1752. When he actually took it is not certain; Percy says when he was about 20—it must have been before 1763 for, in an agreement with "Dodsley," written by Goldsmith in that year and now in the British Museum, he calls himself M.B. Clarke thinks he most likely took it between 1756 and 1763. It will be seen later there is no doubt he did take it. His father had died while he was at college, but his uncle, the Rev. Thomas Contarine, who had married his father's sister, gave him much of the necessary money to study medicine at Edinburgh, where he entered as a medical student in the autumn of 1752. In the class rolls of Prof. Munro is the entry that Oliver Goldsmith joined the class for anatomy at the end of October, 1752, and again at the end of October, 1753, in each case paying three guineas.

He writes[1] to his brother-in-law, Daniel Hodson, saying that during the day he has to attend lectures, at night he is in his lodging with hardly any society but a folio book, a skeleton, his cat, and a meagre landlady. He pays 23 pounds a year for diet, washing, and lodging, which is the cheapest to be got in Edinburgh; he reads hard, which he never could do if the subject was displeasing. The letter concludes: "Direct me to Surgeon Sinclair's in the Trunk Close, Edinburgh." This was a short street in old Edinburgh, going between the High-street and the open space around the old physic garden. After he has been in Edinburgh some seven months we find a letter from him to his uncle Contarine, telling that except for knowing a few who attend Munro's lectures, he is a recluse. "I shall give you the Professors' names and, as far as occurs to me, their characters, and the first as most deserving is Mr. Munro, Professor of Anatomy. This man has brought the science he teaches to as much perfection as it is capable of, and not content with barely teaching anatomy he launches out into all branches of physic, where all his remarks are new and useful. 'Tis he, I may venture to say, that draws hither such a number of students from most parts of the world, even from Russia; he is not only a skilful physician but an able orator, and delivers things in their nature abstruse in so easy a manner that the most unlearned may, must understand him; Plumer, Professor of Chemistry, understands his business well, but delivers himself so ill that he is but little regarded; Alston, Professor of Materia Medica, speaks much but to little purpose; the Professors of Theory and Practice say nothing but what we may find in the books laid before us and speak in so droneing and heavy a manner that their hearers are not many degrees in a better state than their patients." After giving this impression of the Edinburgh teachers, he says he shall go to Leyden; he clearly enjoys his studies, for—"I read a science the most pleasing in nature so that my labours are but a relaxation and I may truly say the only thing here that gives me pleasure."



Oliver Goldsmith's signature, in the entrance book of the Royal Medical Society of Edinburgh, Jan. 13th, 1753. For this I am indebted to Dr. J. D. Comrie, lecturer on the History of Medicine, University of Edinburgh.

The Royal Medical Society,[2] an ancient students' society in Edinburgh which still exists, admitted Goldsmith as a member in its sixteenth session, for his signature with ten others appears among those who were admitted on Jan. 13th, 1753 (see figure). Some of his biographers infer that he was distinguished by not having to read a paper on his admission, but this is not so, for members read their papers some time after admission. He was remembered favourably by the celebrated Black, and we know that several of his fellow students conceived a regard for him. Everything goes to show that at Edinburgh he worked hard at medicine, was interested and happy in it. He relaxed, for he took a month's trip into the Highlands; he observed the people when he wrote his famous "description of this unfruitfull country" to his cousin, Robert Bryanton, and he "spent more than a fortnight every second day at the Duke of Hamilton's, but it seems they like me more as a jester than as a companion; so I disdained so servile an employment; it was unworthy my calling as a physician."

His expenses in Edinburgh were paid by his uncle Contarine, his sister Mrs. Hodson, and his brother Henry; he lived honourably within his means; he "was obliged to buy everything since I came to Scotland, shirts not even excepted." His tailor's bill for the year 1753 was what Forster calls "the not very unmoderate sum" of £9 11*s.* 2½*d.*; it included hose and hats, and shows that he liked sky-blue and claret colours. His letters indicate grateful affection for the kindness of his relatives, and in the last letter he sent to his uncle before leaving Edinburgh, he says: "As I shall not have another opportunity of

* Since writing this I learn that Dr. T. P. G. Fitzpatrick has recently given a lecture in Dublin on Goldsmith's Connexion with the Medical Profession.

receiving money from your bounty till my return to Ireland, so I have drawn for the last sum that I hope I shall ever trouble you for, it is £20. And now, dear Sir, let me here acknowledge the humility of the station in which you found me; let me tell you how I was despised by most, and hateful to myself. Poverty, hopeless poverty, was my lot and Melancholy was beginning to make me her own. When you—but I stop here . . . I shall carry just £33 to France with a good store of shirts, clothes, etc., and that with economy will serve."

*Travels.*

In 1754 Goldsmith left Edinburgh to further perfect himself in medicine. To his uncle he writes from that city: "After having spent two winters in Edinburgh, I now prepare to go to France the 10th of next February (1754). I have seen all this country can exhibit in the medical way and therefore intend to visit Paris where the great Mr. Farhein (Ferrein), Petit and Du Hammel de Monceau instruct their pupils in all branches of medicine. They speak French, and consequently I shall have much the advantage of most of my countrymen, as I am perfectly acquainted with that language, and few who leave Ireland are so. Since I am upon so pleasing a topic as self applause, give me leave to say that the circle of science which I have run through, is not only useful, but absolutely necessary to the making of a skilful physician. Such sciences enlarge our understanding, and sharpen our sagacity; and what is a practitioner without both but an empiric, for never yet was a disorder found entirely the same in two patients. A quack, unable to distinguish the particularities in each disease, prescribes at a venture: if he finds such a disorder may be called by the general name of fever, for instance, he has a set of remedies which he applies to cure it, nor does he desist till his medicines are run out or his patient has lost his life. But the skilful physician distinguishes the symptoms, manures the sterility of Nature or prunes her luxuriance; nor does he depend so much on the efficacy of medicines as on their proper application. I shall spend this spring and summer in Paris, and the beginning of next winter go to Leyden. The great Albinus is still alive there and it will be proper to go though only to have it said that we have studied in so famous an university." Another reason that must have urged Goldsmith to go to Leyden was that several of the Edinburgh teachers had studied there, for Leyden was then at the height of its fame brought to it by Sylvius, Boerhaave, Albinus, and others. He started for France by way of Bordeaux, but various adventures, which included imprisonment by mistake in Newcastle, brought him first to Leyden. Almost nothing is known of his doings there. In the May after his arrival he wrote a long letter to his uncle Contarine, but the only reference to medicine is "Physick is by no means taught here so well as in Edinburgh, and in all Leyden there are but four British students, all necessaries being so extremely dear and the Professors so very lazy (the chemical Professor excepted) that we don't care much to come hither." This suggests that quite soon he had found Leyden medicine uninteresting: he stayed in the town nearly a year; it is believed he taught English; he gambled and became penniless, being forced to borrow from a fellow student named Ellis. Finally, he left on his walking tour through Europe with only the clothes he stood in, a guinea in his pocket, and a flute.

Although, as many of his writings are obviously biographical, and therefore it is possible to form a picture of his wanderings, there is nothing to show that during them he did anything medical, but it has been suggested that he obtained a medical degree either at Leyden, Louvain, or Padua. If at any, it certainly was not Padua, possibly Louvain; the records of Leyden and Padua are destroyed. He passed through Flanders to Paris, then to Geneva through Switzerland and Germany and Italy, playing the flute and disputing, for he says: "In all foreign Universities and convents there are upon certain days philosophical theses maintained against every adventitious disputant; for which, if the champion opposes with any dexterity, he can claim a gratuity in money, a dinner and a bed for one night. In this manner then I fought my way towards England; walked from city to city."[3]

*Practises as a Physician.*

On Feb. 1st, 1756, Oliver Goldsmith arrived at Dover penniless. During the ten days or a fortnight the journey to London took, he, on his way, tried to get hired at an apothecary's shop. Reaching London he wandered about in great destitution, trying to obtain work, but could not until a chemist named Jacob, who had a shop at the corner of Monument-yard on Fish-street-hill, took pity on him and gave him employment. He heard that Dr. Sleigh, an Edinburgh fellow student, lived near; he put on his best clothes to call on him, but they were so shabby that Sleigh at first did not recognise him. Oliver made himself known and found Sleigh's "heart as warm as ever and he shared his purse and friendship with me during his continuance in London." With the help of Jacob and Sleigh Goldsmith set up as physician in Bankside, Southwark, some time early in 1756.† His dress improved a little, because he acquired a second-hand professional coat; still the tale is told that when feeling the pulse of a patient with one hand he held his hat over a hole in his clothes with the other. So many students then attended Guy's and St. Thomas's Hospitals that the minutes of the Court of Committees of Guy's Hospital contain regulations for them drawn up by members from both hospitals. Bankside is very near, therefore it is very likely that Oliver attended these hospitals to polish his knowledge of medicine, which must have become very rusty, but as there is now no list of such students it is impossible to be certain. One of his patients was a printer's workman, who was employed by Samuel Richardson, printer and novelist. Through him Goldsmith was appointed reader and corrector to Richardson; in 1757 he took the post of usher at Dr. Milner's School at Peckham, but he soon left, for in April, 1757, he went to live with Griffiths, the bookseller, in order to devote himself to the *Monthly Review*. Nevertheless, after that date, he still made a little money as a physician, for as late as Dec. 27th, 1757, in a letter to his brother-in-law, Hodson, he speaks of making shift to live by practice as a physician and by authorship. We do not know the precise date of his leaving either Jacob or Bankside, but the neighbourhood made some impression on him, for in the second act of "She Stoops to Conquer," Tower Wharf and the Borough are mentioned ironically as places of fashion, and in "Mrs. Mary Blaize" we find not only a laugh at his own profession—

> "The doctors found, when she was dead
> Her last disease was mortal."

but a local allusion:—

> "Let us lament, in sorrow sore,
> For Kent Street well may say,
> That if she had lived a twelvemonth more,
> She had not died to-day."

Tabard-street, Borough, was then called Kent-street, now, as then, a dirty, low, beggarly thoroughfare.

He quarrelled with Griffiths, and separating from him towards the end of 1757, lived in a garret in wretched poverty; early in 1758 he called on Dr. Milner, who took him in, and he again taught at Peckham. Dr. Milner tried to help him, by giving him an introduction to Mr. Jones, an East India director. At the same time Goldsmith conceived the idea of writing his "Enquiry into the Present State of Polite Learning in Europe," hoping that the payment he received for it would provide for an outfit for India. In August, 1758, he left Dr. Milner, and on August 31st he writes to Daniel Hodson: "I suppose you have heard of my intention of going to the East Indies. The place of my destination is one of the factories on the coast of Coromandel, and I go in quality of physician and Surgeon for which the Company has signed my warrant." He then speaks of his expenses, says his salary will be £100 a year, but practice will be £1000 a year and that it is only the pay that attracts him, for he is every day gaining friends and esteem and he would be happier where "he might enjoy the conveniences of life." Wishing to save his passage money, he tried to get the post of hospital mate, but he had no clothes suitable for presenting himself for examination on Dec. 21st, 1758, at Surgeons' Hall, Old Bailey,‡ so he persuaded Griffiths to be a security with a tailor for a new suit, which was either to be returned or the debt for it discharged within a given time. For this privilege Goldsmith was at once to review four books for the *Monthly Review*. Unfortunately he failed to pass the examination, for the records of the College of Surgeons state "Oliver Goldsmith found not qualified," but this only deprived him of a free passage, it did not affect his civil appointment, for writing to his brother Henry under Jan. 13th, 1759, he says: "I have met with no disappointment with regard to my East India voyage nor are my resolutions altered." Nevertheless he never went, probably, as Katherine C. Balderston suggests, because as a result of serious fighting with the French in Coromandel, the East India Company for a time did not control affairs there, and when better local conditions arrived, Goldsmith's "Enquiry" had appeared, his literary fortunes were looking up, and he was committed to trying his fate in London.

His going up for the examination at Surgeons' Hall had an unexpected result. He was living in filthy lodgings in Green Arbour Court, Fleet-street, approached by Break Neck Steps from Farringdon-street. It was a miserable

† I cannot find any picture showing Bankside at that date. The rate-books previous to 1800 are not available. Mr. F. Halliwell, the chief librarian of the Southwark Public Libraries, who has kindly recently tried for me, has failed to find anything about Goldsmith's sojourn in Southwark.

‡ For the names of his examiners, see THE LANCET, 1911, i., 696.

court of tumble-down houses and many lines of clothes hanging out to dry. The keeper of this wretched house—Goldsmith had but one chair—was taken by bailiffs, the lodger was in debt for rent, so the gay suit bought for the examination was pawned and the four books for review were pledged for a loan from a friend. Directly this was done a note from Griffiths arrived, demanding repayment, and Goldsmith wrote to him a letter, "the most interesting of all the Goldsmith papers that have been preserved to our time."

During the next few years his chief work was writing, but he saw a patient or two, for in a beautiful essay called "The Indigent Philosopher," [4] written in 1762, he tells that he had just returned from the funeral of his friend, Sir William Abner. "I attended him as his friend and Physician during his last illness. I soon saw that he was dying, and was glad of it. He was leaving a world unfit for him."

In 1765 Reynolds told Goldsmith that it would be a good thing if he had a regular calling and was both a physician and a man of letters, consequently he dressed up in purple silk small-clothes, a handsome scarlet roquelaure, a full dress wig, a sword and a gold-headed cane, but the physician did not like it, for, said he, "here am I shut out of several places where I used to play the fool very agreeably." He tried practice for six months and had a patient, Mrs. Sidebotham; she, when her physician differed from her apothecary, sided against the physician, who thereupon left the house in high indignation. This appears to have been the end of his attempts to practise, although, as he was almost always known as Dr. Goldsmith, as Hawes calls him a brother practitioner, and as while in "Jupiter and Mercury" Garrick leaves out the doctor in speaking of Goldsmith as "this scholar, rake, Christian, dupe, gamester, poet," there is much about him as a doctor in Garrick's prologue to "She Stoops to Conquer," it is quite possible that he may have occasionally seen some patients for the rest of his life. This suggestion would also explain why he took his M.B. at Oxford. On Tuesday, Feb. 14th, 1769, Johnson, Percy, and Goldsmith went to Oxford, they dined at University College, Queen's, and Trinity, and *Jackson's Oxford University Journal* for Saturday, Feb. 18th, 1769, says: "Yesterday Oliver Goldsmith Esq., Bachelor of Physic of the University of Dublin . . . was admitted in congregation to the same degree in this University." [5]

### *Medicine in Goldsmith's Writings.*

Be this as it may, Goldsmith certainly did not now greatly care for the profession of medicine, and he wrote so much on general topics that he cannot have had time for it; the catalogue of his books which were sold at his death contains hardly any on medicine, and the reader of his works will find few references to medicine, and nearly all that can be found are so vague that they might have been written by an author who was not a doctor. The parson and schoolmaster, but not the doctor, are described in "The Deserted Village," the only reference to him in "The Vicar of Wakefield" is in Chapter III.: "Physicians tell us of a disorder, in which the whole body is so exquisitely sensible, that the slightest touch gives pain." He is not mentioned in "She Stoops to Conquer," but in the intended epilogue Goldsmith wrote:—

> "Doctors who cough and answer every misfortuner,
> 'I wish I'd been call'd in a little sooner.'"

In "An Enquiry into the Present State of Polite Learning in Europe," the only sentence that even suggests that the author is a doctor is in Chapter XII. "In an infirmary, the student who only attends to the disorders of a few patients is more likely to understand his profession than he who indiscriminately examines them all." "The Man in Black" is autobiographical, but there is no reference to medicine in it, nor is there in the rest of the "Citizen of the World," but in *The Bee* [6] we find in the article on Education this invaluable advice for children, "No luxurious dishes with high seasoning, nothing given to children to force an appetite, as little sugared and salted provisions as possible, though never so pleasing; but milk morning and night, should be their constant food . . . it corrects any consumptive habits." Modern research has indeed vindicated Oliver. In a review of "Philosophical Miscellanies on Various Subjects," by M. Formby,[7] Goldsmith shows that he has read some physiology, for the speaks of the secretion of sweat and the relation of the cerebrum to voluntary motion, and when writing of the inhabitants of different climates he also mentions the secretion of sweat.[8] In the Epilogue to "The Good Natured Man" (published in 1767) we find:—

> "No no, I've other contests to maintain;
> To-night I head our troops at Warwick Lane."

This refers to the fact that in 1767 the Licentiates of the Royal College of Physicians which was then in Warwick-lane, marched in a body to the College, demanding to be present at Comitia meetings. The President and Fellows locked themselves in, but the Licentiates hired a blacksmith to force the door and filled the College. Sir William Browne, the President, dissolved the Comitia.‖

There were two subjects, hydrophobia and quacks, about which Goldsmith wrote a good deal, no doubt because, being a physician, he was interested, but what he wrote does not show any special knowledge: it might have been equally well-written had he not been a doctor. It is difficult for us to conceive the fearsome, justifiable dread that our ancestors had of hydrophobia, always fatal and the most terrible of deaths, as I know from having seen persons die of it. Medical writings of the eighteenth century are full of cases and of supposed cures. Dogs were killed by hundreds. Goldsmith tried hard the humane task of alleviating the horrible fear, chiefly by pointing out that the bite of a dog often did not kill. This was true, for the dog might not be mad, and if he were, the bite was usually harmless when through the clothes, for they absorbed the poisonous saliva, thus:—

> "And while they swore the dog was mad
> They swore the man would die
> But soon a wonder came to light
> That show'd the rogues they lied
> The man recover'd of the bite
> The dog it was that died."

In letter Sixty-Nine of the "Citizen of the World" he ridicules the fear of mad dogs, and in the "Progress of the Arts in Switzerland" [9] he says "as we have been, frequently of late, teized with cures for the bite of a mad dog," and he goes on to say that pimpernel tea has been recommended, he describes how to make it, but expresses no opinion.

We have seen in a letter to his uncle, written from Edinburgh in 1753, that he speaks scornfully of quacks. They flourished in his time like weeds. They are ridiculed and satirised in letters Twenty-four and Sixty-eight of the "Citizen of the World"; a doctor Rock§ is especially castigated. Inasmuch as James Powder was then considered a quack remedy, the general outcry against quacks was inflamed by Goldsmith's death and that of a Mr. Scawen.

He seems to have known some of the notable men in the medical profession, for he wrote humorous verses in reply to an invitation to dinner with George Baker, who became President of the College of Physicians, discovered the cause of lead colic, and did a large fashionable practice. His nephew, Mrs. Hodson's son, came to London and, on the advice of his uncle Oliver, studied medicine: his uncle wrote a letter introducing him to William Hunter, the original is in the possession of the Royal College of Surgeons. The uncle reported to Mr. Hodson that the student made good progress and that he had obtained for him the post of full surgeon in India. Katherine Balderston prints the following short note of Goldsmith's: "Dr. Goldsmith presents his compliments to Dr. Mackenzie, he will be at home this day till three, or at any other time the doctor shall appoint. Or he will wait upon him at Southwark. He is engaged to dinner every day for this six or seven days." I have tried, as others have done, to find out who this Dr. Mackenzie can have been, but I have not succeeded.

Thanks to Ronald S. Crane there has recently been brought to light the remarkable fact that Goldsmith [10] introduced Auenbrugger's discovery of percussion to England immediately upon the publication of his book in Vienna in 1761. Goldsmith gives an admirable abstract of the book, and concludes: "Such are the outlines of this new discovery; whether it may be of use to society or not, there is no necessity for me to pretend to determine, only this may be observed, that the lungs are often in the most healthy state, found to adhere to the pleura, and in such a case, I fancy the sound would, in that part, deceive the practitioner: however, I shall not pretend to set up my conjecture against his experience." Auenbrugger's discovery of percussion had to wait several years before it was generally recognised, this was not the fault of Goldsmith, and it is pleasant to think that an Englishman noticed it immediately, even before Roziere de la Chassagne, to whom the credit is usually given.[11]

### *Death of Goldsmith.*

John Forster tells us that in 1762 Goldsmith was not well and went to Tunbridge and Bath, that he was severely ill in 1772 with strangury from which he obtained relief by James' powders, about which he became a bigot. He arrived in London in the middle of March, 1774, having recovered from a recurrence of his disease, but on March 25th he took to his bed in his chamber in Brick Court, where his bedroom was a closet without any light in it. This fatal illness led to so much controversy, that his loving friend,

‖ I am indebted to Dr. Arnold Chaplin for this information. For a full account of the dispute, see "Medicine in England During the Reign of George III.," by Arnold Chaplin, M.D., London, 1919.

§ For an account of Rock see "The Quacks of Old London," by C. J. S. Thompson, London, 1928.

William Hawes,¶ the apothecary, called in to attend him, published a pamphlet, "An Account of the late Dr. Goldsmith's Illness so far as relates to the Exhibition of Dr. James' Powders," by William Hawes, Apothecary, London, 1774. He dedicated it to Sir Joshua Reynolds and Edmund Burke. In the dedication he says: "I have reason to believe some persons have formed very unjust and uncandid notions respecting my conduct in the affair." Hence the pamphlet. Hawes tells us that Goldsmith sent for him at 11 P.M. on Friday, March 25th, 1774. The patient had violent, intensive frontal headache, no pain elsewhere, no shivering, a moist tongue, pulse 90. He told Hawes that he had taken two ounces of ipecacuanha wine as a vomit, and that he desired to take James' powder. Hawes said he thought this would do harm and suggested an opiate. Goldsmith was obstinate, and Hawes remarks on the difficulty of treating a brother practitioner. The argument lasted half an hour, Goldsmith would not give way, so Hawes had to say that the taking of the James' powder would be without his approbation, and he suggested calling in Dr. Fordyce; this led to more argument, but finally Goldsmith consented. Fordyce went the same night and by the time he reached Goldsmith's chambers the patient had already taken two or three doses of the powder, which had operated as a purgative and emetic. Fordyce disapproved of the taking of the powder.

Hawes went to see Goldsmith the next (Saturday) morning and was told he was dozing, and so did not go up to him, but called in the evening, when he found him very ill with great diarrhœa and vomiting, and his servant said that Goldsmith had continued to take James' powder; he was much reduced and his pulse was very quick and small. Goldsmith said to Hawes, in a low voice, "he wished he had taken my friendly advice last night." He seemed to have neither spirits nor strength to speak more. The same evening Dr. Fordyce called on Hawes and said that Goldsmith had done himself such injury by taking James' powder that he proposed to call in Dr. Turton. At 8 A.M. on Sunday morning Hawes went again and found the patient much worse, very weak, much vomiting and diarrhœa; with Goldsmith's consent he sent for Turton. Drs. Fordyce and Turton met at the time appointed to assist at a consultation, which was continued twice a day till the patient died on April 4th, 1774.

After Goldsmith's death paragraphs appeared in the papers** ascribing it to James' powders; this aroused replies in the *Morning Post*, which published accounts of his illness from Mary Ginger, wife of the head porter of the Inner Temple, who attended on him for the last five years of his life; Sarah Smith, the nurse who nursed him in his fatal illness and John Eyles (his servant), all of whom declared that the patient had much less James' powder than Hawes states and that he was very angry with Hawes because he had sent powders which were not James' powders. Mary Smith says that at the funeral Hawes said that James' powder was the occasion of death. A letter from Sal. Glauberi attacks Hawes in such wretched taste that I instinctively distrust the writer; he is answered temperately by another correspondent, Francis Spilsbury,[12] who, although he defends the use of quack medicines and abuses Hawes, concludes that Goldsmith's death was "owing to an undeniable and demonstrated injudicious use of James' powder," and later on he says: "Therefore I will not deny that to them (James' powders) the death of Dr. Goldsmith may be imputed." Reading the available documents, the impression given is that there is not sufficient evidence to determine the primary illness, that death was much accelerated by antimony poisoning,†† that Hawes' is a fair account; that probably the proprietors of James' powder were afraid that Goldsmith's death would lessen the sale of the powders, and that Hawes was trusted by Goldsmith's friends for, after the death, Reynolds and Burke honoured him with the management of the disposition and sale of Goldsmith's furniture and books, and Maurice, Oliver's brother, warmly thanked him for all that he had done.

¶ A greatly respected, able man, physician to the London Dispensary. He did much work on the resuscitation of the apparently drowned, he founded the Royal Humane Society, and published "An Examination of the Rev. John Wesley's Primitive Physic." See Gentleman's Magazine, 1808, lxxviii., 1121.

** The copy of Hawes' pamphlet in the Royal Society of Medicine Library has some of these newspaper cuttings bound up with it.

†† Kenrick, one of Goldsmith's enemies, actually suggested that he committed suicide by taking the powder.

*References.*


1. All references to Goldsmith's letters are from The Collected Letters of Oliver Goldsmith, edited by Katherine C. Balderston, Cambridge University Press, 1928.
2. Comrie, J. D.: History of Scottish Medicine to 1860, London, 1927, p. 214.
3. Forster, John: Life and Times of Oliver Goldsmith, London, 2nd ed., 1854, i., 75.
4. Lloyd's Evening Post and British Chronicle, January, 1762, reprinted by Ronald Crane in New Essays by Oliver Goldsmith, Chicago, 1927.
5. Clarke, Sir Ernest: Proc. Roy. Soc. of Med., History of Medicine Section, Jan. 28th, 1914.
6. The Bee, No. 6, Nov. 10th, 1759.
7. The Critical Review, June, 1759.
8. The Royal Magazine, 1760.
9. Public Ledger, August 29th, 1761.
10. Public Ledger, August 27th, 1761; for references 6, 7, 8, 9, and 10, see Crane, Ronald, op. cit.
11. THE LANCET, 1924, i., 263.
12. Spilsbury, F.: Thoughts on Quacks, 2nd ed., London, 1777.


## DIAGNOSIS OF MENOPAUSE.

*To the Editor of* THE LANCET.

SIR,—Most medical practitioners agree that the signs and symptoms usually associated with the menopause are so vague that a sharply defined diagnosis is often impossible. In my own experience I have found certain signs to be definitely associated with the menopause, and I should be grateful if other investigators could inform me if they have observed them. In certain cases the condition of the hands has arrested my attention; on examination they appear to be painted with red pigment on the palmar aspects—on the fingers near their tips, the radial aspects of the thumbs on the terminal phalanges, the thenar and hypothenar eminences, and above the creases on the wrists. In other words, the condition can be imitated by placing the palmar aspects of the hands lightly (and as if by accident) on a table smeared with "wet paint" and immediately withdrawing them. The condition is transient, while the usual pressure signs mark it as vascular.

I am, Sir, yours faithfully,

Dublin, May 29th, 1929. JOHN V. RYAN M.B., B.Sc.

## ON GOAT KEEPING.

THE British Goat Society's Year Book for 1929 is now in its ninth annual issue and contains much useful information for keepers and breeders. There are several contributions by medical men. Dr. W. Ker Bell has an interesting note on Goats' Milk and the Value of its Calcium Content, while Mr. F. E. Corrie, B.Sc., discusses the value of the iodine content of milk both to the goat and the drinker of its milk, such content being controlled by the food supply. Dr. R. T. Leiper, F.R.S., Director of the Institute of Agricultural Parasitology, deals with the Internal Parasites of the Goat, pointing out that the worm infestations accumulate in the animals not by multiplication inside but by the addition of new parasites to the feeding grounds of the goat due to accumulative droppings. "If one could find a drug" says Dr. Leiper, "which would at a single dose remove all the parasites from the inside of the goat, the animal would again become infected very soon from the young stages in the grass in its paddock." Speaking of the two aspects of the Institute's work, prevention and treatment by new methods, Dr. Leiper sees in their coöperation the ultimate relief of suffering. Among other articles of interest are the Constituents of Food and their Fate in the Animal Body by Mr. A. B. Orr, M.R.C.V.S., Goats' Milk as a Food by Mr. J. C. Urquhart and Mr. F. Knowles, and the Mechanics of Digestion by Mr. H. Stainton, F.R.C.V.S. The annual, which is well illustrated, contains the rules and regulations of the British Goat Society, a list of judges for the year, and the names and addresses of members. It can be obtained from the hon. secretary, Mr. Thomas W. Palmer, 10, Lloyd's-avenue, London, E.C.3., price 1*s.* 6*d.*

## THE NON-FRENCH WINES.

WHILE France is par excellence the country which produces the most satisfactory as well as the most beautiful wines known to us, many claim that Germany, with its hocks and moselles, offers at least as high and delicate an invitation to the palate as anything that Bordeaux or Bourgogne can give, while Portugal and Spain make claims of high character on different grounds, and the wines of Italy, especially as drunk in Italy, have qualities of their own which win them many admirers. Mr. Shand, who has already written on food and wine generally, and an excellent book upon French wines,[1] now introduces us to a category of the wines of Portugal, Spain, Germany, and Italy, and also of Switzerland, Austria, Hungary, and the new state of Czecho-Slovakia, and, lastly, of the British Empire. He sets out under each wine its claims and its qualities, and in many cases the mass figures of its production, giving the reasons for his judgments and also much useful information of a general character. A valuable glossary is added. The book will be found a practical work of reference and will also help doctors in advising patients as to their diets.

[1] A Book of Other Wines than French. By P. Morton Shand. London: Alfred A. Knopf. 1929. Pp. 185. 10*s.* 6*d.*